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OIL WEEKLY

OIL and GAS ENGINEERING

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THE WEEK'S NEWS INTERPRETED

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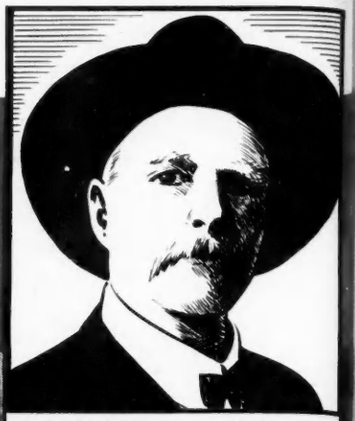

J. F. (Bud) Ledbetter — Probably most famous of early Oklahoma peace officers

OUR SPECIALTY IS WIRE LINES THAT MEET OIL FIELD REQUIREMENTS

A Pioneer Oklahoma "G-Man"

It was during territorial days, when Eastern Oklahoma, then Indian Territory, was "wild and woolly", that the late J. F. (Bud) Ledbetter began his career as a peace officer. He was perhaps the most famous of a small group of federal marshals who pioneered the enforcement of law and order in Indian Territory.

Although Ledbetter shot it out, on numerous occasions, with the Territory's most desperate killers, he was never wounded, due to the fact that he had nerves of steel, was a dead shot, and was quick on the draw. On one occasion he quelled a riot single handed. With 5 men shooting at him he killed 4 instantly with five shots from his revolver. Ledbetter died recently at the age of 84.

In 1880, when law enforcement in Oklahoma was in its infancy, J. F. Ledbetter began his brilliant career as a peace officer by declaring "open season" on all Oklahoma outlaws. From the time that he began "specializing" on outlaws, Ledbetter always "got his man."

Specialization by a wire rope manufacturer also gets results. The leadership of UNION Wire Lines, today, is based on the fact that they are built by Oil men to meet the special requirements of Oil field service.

The photo shows Well No. 1 on Phillips Petroleum Company's "Liberty Lease," Oklahoma City field. Left to right, front row are: L. P. Nixon, salesman, and Hal R. Gruber, vice-president and sales manager, Union Wire Rope Corp.; M. G. Ensinger, president and general manager, Union Wire Rope Corp.; T. J. Hamilton and Scott Watson, Phillips Petroleum Co. Middle row: H. S. Kelly, Klint Moore, Frank Willibrant. Back row: L. A. Barlow, J. F. Sparks,—last five all with Phillips Petroleum Co.

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THE OIL WEEKLY

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Oil Man's Calendar

SEPT. 15–17	National Petroleum Association, Hotel Traymore, Atlantic City.
16–19	Pacific Oil Show & Black Gold Festival, Taft, California.
22–24	American Society of Mechanical Engineers, Erie, Pennsylvania.
24–25	Michigan Petroleum Association, Traverse City.
SEPT. 27 OCT. 1	American Gas Association, Cleveland, Ohio.
OCT. 4–9	Chicago Exposition of Power & Mechanical Engineering, New International Amphitheatre, Chicago.
5	East Texas Chapter meeting, American Petroleum Institute, Kilgore.
7–8	American Institute of Mining and Metallurgical Engineers, Petroleum Division, Fall Meeting, Oklahoma City, Oklahoma.
11–15	National Safety Congress & Exposition, Kansas City, Missouri.
11–16	Oil-World Exposition, Houston, Texas.
13–14	Indiana Independent Petroleum Association, Indianapolis, Ind.
13–15	Institution of Mechanical Engineers, London, England, discussion on Lubricants and Lubrication.
14–16	American Association of Petroleum Geologists, Mid-Year Meeting, Pittsburgh, Pennsylvania.
14–16	Independent Petroleum Association of America, Houston, Texas.
18–22	American Welding Society, Atlantic City, New Jersey.
18–23	American Institute of Mining & Metal. Engineers, Atlantic City.
27–28	Indiana Independent Petroleum Association, Indianapolis, Ind.
29–30	Mid-Continent Oil and Gas Association, Texas Division, Dallas, Texas.
NOV. 8–12	American Petroleum Institute, (Annual), Chicago, Illinois.
1938 MAR. 16–18	Annual Meeting, American Association of Petroleum Geologists, Roosevelt Hotel, New Orleans, La.

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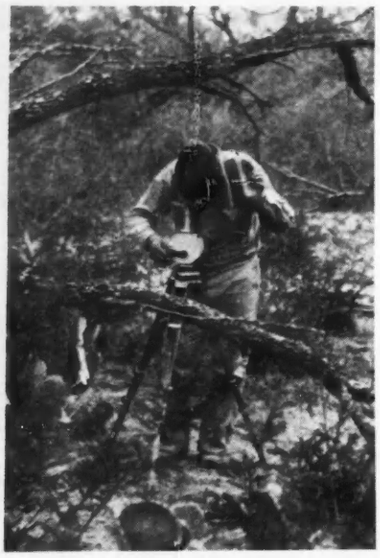

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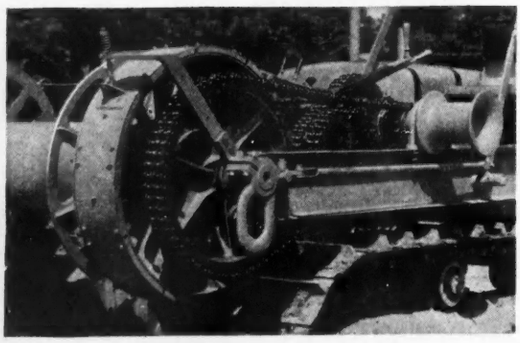

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LOOKING AHEAD

WITH THE EDITOR

Measuring Wet Gas . . .
Big Engines on Little Foundations . . .
Principles of Repressuring . . .

WHILE the problems of wet gas measurement afford a great many problems, which vary greatly in different districts, there are common sources of troubles. According to H. F. Chapman, in an article to appear next week, these common troubles are the source of most of the errors encountered in measuring wet gas. He tabulates seven main problems, and then presents a brief, concise discussion of the factors applying in each instance with suggestions for overcoming the situation.

WHEN pipe line runs out of a given area exceed expectations, it often becomes necessary to increase the capacity of a carrier or gathering system. Under ordinary conditions the new power units will not fit the older foundations, a situation involving rather expensive wrecking and building. A practicable method of making larger engines fit smaller foundations will be described in an early issue.

DESPITE a marked trend toward more efficient methods of production, which has resulted in the recovery of a greater percentage of the oil in a field, a large amount of petroleum remains in the reservoir. Thus, the problem of producing oil more efficiently and of obtaining greater ultimate yields becomes self-evident. One of the methods used to procure a larger percent of the original oil content is repressuring. Much research has been conducted in the restoring of pressures, but no attempt has been made to correlate all the research data together in one concise article. The latter desired and needed work has been accomplished by Joe S. Levine of Pennsylvania State College, first of which is to appear next week.

The changing panorama

this week

THE oil industry still is sitting near the top of the world, even if it did slip downward somewhat in August.

Stricter allowables of September already have turned crude production downward from the recent all-time peak levels, which were not far short of 4,000,000 barrels a day, and the markets have responded by becoming more steady.

Record Output at Refineries

Refinery operations still show the effect of the overproduction of crude in August, crude runs to stills having risen to a new all-time peak of 3,445,000 barrels daily in the week ended September 4.

Processing so much crude, the plants have been turning out more gasoline and other products than market requirements have justified, and gasoline stocks lately have not been drawn upon to the usual extent for this time of year. In the week ended September 4, the gasoline stocks showed, in fact, an increase, the first since last spring. On that date the supply on hand was 14.6 percent greater than the inventories held one year previously, while gasoline demand has been running this year only around 10 percent higher than last year.

Better Markets Promised

The present stricter control of crude oil production is expected, however, to result in closer balancing of refinery operations with market requirements.

Consequently, the markets for refined oils, as well as for crude oil, promise to be stronger in the weeks ahead.

Much Drilling in Progress

In line with the record production of crude oil this year, drilling activity has been the greatest for many years.

In the first 8 months of this year 18,960 wells were completed, or 18.9 percent more than the number finished in the similar period last year. In each of the full years, 1931 and 1933, fewer than 12,000 wells were completed.

If the 18.9 percent increase over last year is extended to December 31, completions for 1937 will total about 28,500 wells. That would be considerably more than the 23,463 wells completed in 1929 and around the total of 28,995 finished in 1926.

Oil Field Discoveries Lagging

Despite the discovery of some good oil fields and a larger number of questionable importance, the industry this year has hardly been able to add as much to the established crude reserves as it has been withdrawing, in fulfilling the unprecedented consumer demand.

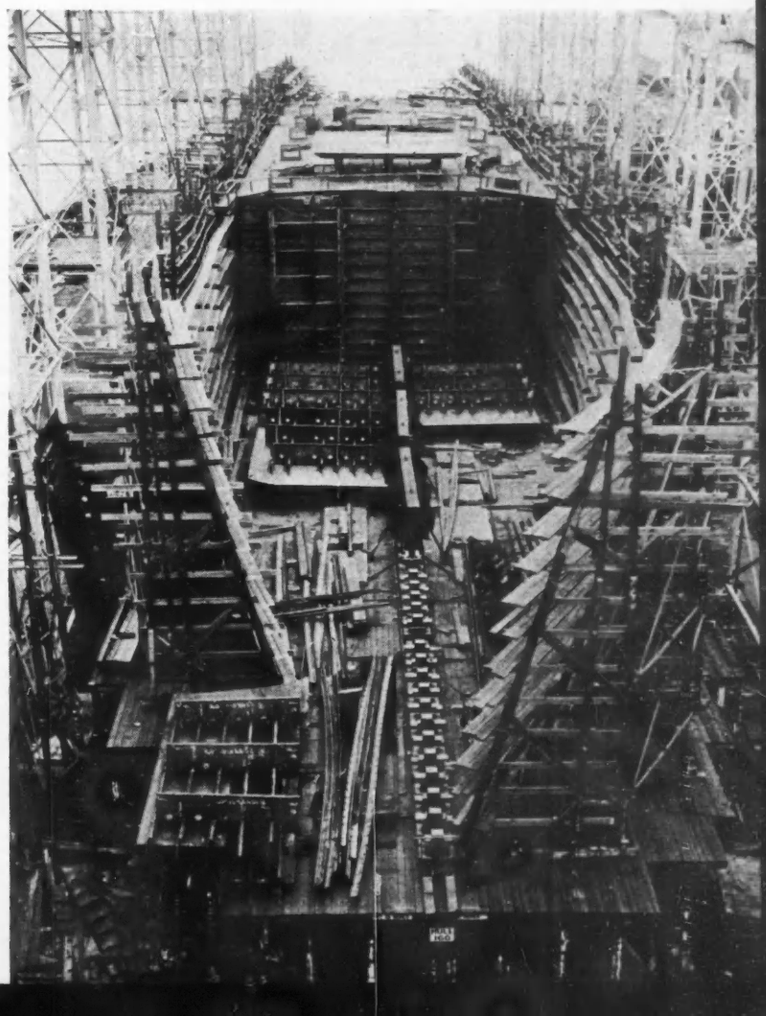
Several districts have fallen far behind in supplying new fields, although Texas, Kansas, Illinois and California have substantially rewarded efforts to find new oil.

Major Field a Month Needed

The heavy drilling now under way in the United States undoubtedly will bring a continuation of important oil field discoveries.

But repeated major discoveries will be needed to keep abreast of the almost insatiable demand.

Running close to 1,200,000,000 barrels annually,



WORLD'S LARGEST WELDED SHIP ON WAYS — The new 18,500-ton welded tanker being built for The Atlantic Refining Company at Chester, Pennsylvania. The vessel will have a cargo capacity of 156,000 barrels of gasoline, a length of 521 feet between perpendiculars, and a beam of 70 feet. Turbo-electric engines developing 5000 horsepower will give the tanker a speed of over 13 knots, enabling it to make the trip between Texas Gulf ports and Philadelphia in six days.

the demand amounts to about 100,000,000 barrels a month. That quantity that is used up monthly represents as much oil as a major field gives up throughout its entire life. This means that unless the industry dips down into established reserves and reduces them, it must find the equivalent of a major oil field a month.

East Texas Proration Is Problem

The Texas Railroad Commission still is wrestling with the problem of controlling the East Texas field in a manner that will promote conservation and yet keep the producers satisfied.

A critical stage has been reached in regulating the field. There is technical evidence that the field's production should be cut back, to stop declining pressures.

But wells in the big field already have been cut down to allowables that seem to permit of but little or no further reduction, as new wells have come in and claimed pro-rata participation in the allowables assigned to the field.

A month ago, engineers of the commission presented evidence of declining pressures, indicating that the field allowable should be cut, even though such reduction would further lower well quotas.

Last week the railroad commission was advised that major company wells declined in pressure an average of 10 pounds in August.

The difficult East Texas problem probably will be the most interesting subject considered at the monthly statewide proration hearing to be held by the railroad commission at Austin September 20.

More Texas Taxes Threatened

In Austin last week Governor James V. Allred opened up on oil pipe line companies and utilities, including gas utility companies, and indicated that he expects them to pay a large share of the tax bill to be presented at the forthcoming special session of the Texas legislature. This tax bill, he estimated, would be $15,000,000 a year. The Texas law makers are scheduled to convene September 27.

New Fields Are Opened

West Texas offered the most important developments from the angle of future crude reserves. Duggan pool in Cochran County was extended four miles northwest. Completion of a second well in Slaughter field, Hockley County, proves the structure is more than two miles wide, with the length still undetermined. Whether the wildcat showing for a producer a mile southeast of Foster field in Ector County is an extension of a discovery well is not known. This week saw the beginning of drilling caused by extensions to Harper field, in the same county. More than 100 drilling obligations are called for. A major company anticipates the importance of the area by starting a line from Hobbs, New Mexico, to the north part of the West Texas basin. In addition, the McCamey district in Upton County received an extension of 1¼ miles.

Ten million feet of gas and an oil spray from one foot of lime in a northwestern Stephens County wildcat means fall and winter drilling there. Another important development of West Central Texas was completion of a third well in Avoca field of Jones County without using acid. A large, naturally flowing producer completed in the week extended the Rotan field of Fisher County a half mile east.

Texas Gulf Coast activity featured removal of Hitchcock from the list of prospects and putting it among Galveston County's proven fields. Hastings and Old Ocean fields in Brazoria County were extended.

A wildcat in South Louisiana produced oil from the Sparta, a new formation, during the week, presaging drilling of old prospects again and deeper prospecting in fields along the Conroe trend.

Oklahoma's contribution of the week was a new Wilcox sand pool in Creek County. Rogers County, too, experienced a shallow strike which promises to call for considerable drilling.

Kansas recorded a discovery in Stafford County and chalked up a number of minor extensions, including two instances tending to link fields. Recent discoveries have been in relatively shallow horizons, but deep prospecting continues in the western part of the state.

South Texas developments were led by discovery of heavy, 22 gravity, oil in McFaddin field from Catahoula formation. Ricaby and North Alta Verde fields were presented with new sands.

Market briefs

Outlook — Better crude control is steadying influence.

Crude Market—No further reductions of prices made.

Refined Oil Markets—Prices holding at previous levels.

CURRENT OPERATIONS

Week Ended	Daily Crude Production	Daily Crude Runs to Stills
September 4...	3,692,550	*3,445,000
Previous week.	*3,731,450	3,425,000
Year ago.....	3,008,550	3,025,000

CRUDE STOCKS

Date	Crude Oil (Barrels)
August 28.....	309,506,000
Week ago.....	309,699,000
Year ago.....	301,786,000

REFINED OIL STOCKS

Date	Gasoline (Barrels)	Gas & Fuel Oil (Barrels)
September 4...	67,048,000	113,443,000
Week ago.....	66,997,000	112,111,000
Year ago.....	58,493,000	111,281,000

DRILLING

Period	Wells Completed
Past week.....	626
Previous week.....	624
Year ago.....	461
Year Total:	
This year.....	20,164
Last year.....	16,865

*All time peak.

Engineering Articles

Two long and sometimes heatedly discussed gas-lift questions are answered in an article on page 19. A study of gas-lift operations on a lease at Oklahoma City has shown that the use of large diameter casing is of advantage when conditions are right, and that deep production may be economically produced by this means. The article, written by S. F. Shaw, who was in charge of the work, shows the construction and operating cost of the plant and the amount of production recovered, which indicates that oil has been lifted at $0.113 per barrel. This is remarkably low in view of the deep depth and the low bottom-hole pressures of the wells. A comparison of production procured from wells equipped with large diameter casing illustrates the advantages of so equipping wells when there is a high permeability and a thick sand body.

A study of subsurface pressures by the Bureau of Mines has shown (See article page 30) that there is a definite but simple relation between the mass rate of fluid (oil, gas and water) production and the drop in pressure causing flow through sands. When the mass rates of production for different rates of flow in a well are plotted on logarithmic paper against the difference between the average formation and flowing pressures opposite the producing sands, the relationship is represented by a straight line. Application of relations that may be found between rates of fluid production and differential pressures in producing sands will aid in developing a better understanding of reservoir performance and the related problem of well spacing.

Operators at Smackover are attempting to increase oil production and reduce water recovery by plugging back many of the old wells, a number of which are approaching the absolute limit. The plugging back program involves, because of conditions in the field, many factors not encountered in other fields. Therefore, it is interesting, and at the same time valuable because the difficulties to be overcome will show what improvements can be made by performing this type of work. See page 17.

Labor Situation

Conference held in effort to avert strike of Tide Water men in Oklahoma . . . New contract sought by I.T.I.O. workers . . . Hope generated in Mexico.

WHILE the high leaders of the labor unions took advantage of Labor Day gatherings to gain the ears of workers, some of the lesser lights and members last week were going ahead with the regular operations of the unions.

In Oklahoma, for instance, there was a threat of a strike of Tide Water Oil Company employes at the Drumright refinery. The employes, affiliated with the International Oil Workers' Union, the C.I.O. oil group, empowered the local union to call a strike, at its discretion. The union charged that the company refused its employes the right of collective bargaining and disregarded seniority standings. Officials of the company and of the union at midweek were conferring at Tulsa in an effort to adjust the differences.

A conference was held at Oklahoma City, but without getting results, between C.I.O. union officials and the management of Indian Territory Illuminating Oil Company, in an effort to decide on a new working contract for 1200 employes of the company at Oklahoma City, Seminole, and Wynona. The union seeks a closed shop, the 1929 wage scale, and a 36-hour week.

Hope In Mexican Situation

There is optimism among the American oil companies operating in Mexico, in the hope of an early settlement of the labor situation there. For United States Ambassador Josephus Daniels has offered a confident prediction that an understanding between employers and employes soon will be reached. The ambassador said that the United States government is watching the developments closely, and that it would view with concern any interruption of the existing arrangement between American oil companies and the Mexican government.

American and other foreign oil companies operating in Mexico are opposing large wage increases that recently were recommended by an official commission representing the Mexican government, on the contention the increases are beyond economic justification, and would result in abandonment of American investments.

Ambassador Daniels expressed hope the government of President Lazaro Cardenas would not set aside provisions of a pact between former Ambassador Dwight Morrow of the United States and former President Plutarco Elias Calles, prohibiting retroactive taxation of American oil investments in Mexico. That pact was upheld by the Mexican Supreme Court. Daniels has indicated that the United States government will, if necessary, make strong representations on behalf of the American oil companies.

In Mexico City there is a serious, growing scarcity of gasoline, because of the strike of the Aguila company's employes in the Poza Rica district, State of Veracruz. The Mexico City area normally is supplied by direct pipe line from the Poza Rica field, and because of the strike has been entirely cut off from its supply of crude oil, it is stated.

At various cities and towns in the oil country of the United States, the Labor Day celebrations were marked by hostility between the C.I.O. and the A. F. of L., just as the national leaders of those organizations continued to fight each other verbally. At Oklahoma City, for instance, the A. F. of L. barred any C.I.O. members from participation in a parade. That barring of the C.I.O. members occurred under orders received from Dallas, Texas, from William Green, head of the A. F. of L.

Although in the oil country, Green dealt in a Labor Day speech more with the general labor situation than with the oil unions.

But at the neighboring city of Fort Worth, Harvey C. Fremming, president of the Oil Workers International Union, a C.I.O. affiliate, did discuss oil. He said that in the petroleum industry, with 75 crafts and 150,000 workers, it is impossible to break the organization down into units along craft lines, as the A. F. of L. does; and that many employers in the industry have indicated they could not deal with numerous diversified unions. He made this statement in charging that the A. F. of L. is archaic and out of step with the advance of industrial development and mass production. The C.I.O., in contrast, organizes all workers of an industry into a single union.

In the Labor Day speeches, the C.I.O. leaders were claiming that their organization now has 3,718,000 members, or more than the 3,600,000 paid up members of the A. F. of L.

Proration Matters

Want to repressure Cayuga Woodbine sand . . . ask ten-acre Rotan spacing . . . Fitts proration hearing set . . . Change at Moore requested.

A NUMBER of important Texas field hearings were the most important proration actions of the week, which also saw Oklahoma and Kansas setting dates for hearings of importance.

Cayuga repressuring

At a hearing before the Texas Railroad Commission last week, Tide Water Associated Oil Company presented its program for repressuring the Woodbine sand in the Cayuga field. Besides recycling gas produced from Woodbine wells, Tide Water proposes to repressure the Woodbine with gas from the Trinity formation. This is an entirely new problem for the Railroad Commission and involves several questions which must be answered before the matter can be settled.

Since Tide Water plans to take gas from the Trinity, it will in effect be taking gas from every lease in the field underlain by the Trinity, as only two producing gas wells have been drilled to this horizon. Commission officials pointed out that they were not certain whether the commission could approve an order which would permit such an operation because of the effect that it would have on other properties.

T. A. Hall, Tide Water Associated Oil Company engineer, assured the commission that the royalty owners would be paid for the gas and that in addition to this, these owners would have a royalty interest in the gasoline processed from Trinity gas. Hall estimated that the Woodbine gas which is recycled would yield about 10 barrels of gasoline per million feet and said that tests had shown that the Trinity gas would yield 19.85 barrels of gas per million feet.

Tide Water plans to take gas from Rampy 1, Samuel Snider Survey, Anderson County, process this gas and return it through Rampy 2. Both of these wells are Woodbine producers.

It plans to take gas from the Edens 15, which is drilled to the Trinity and return it through Edens 9, bottomed in the Woodbine. In petitions filed, the Tide Water set up the following facts:

It is proposed to extract the natural gasoline by butane refrigeration or absorption, or both, and by the use of compressors inject the stripped gas into the Woodbine formation.

The purpose of the operation of returning stripped Woodbine gas to the same sand is to determine the practicability of such an operation as a source of revenue which will justify the development of gas reservoirs which have little or no market, it is said. Many such fields are high pressure, the wells very expensive and the available market will not justify the expenditure required to develop the field.

"If such an operation as we contemplate is practicable," the petition said,

"more complete development will be possible and the operators and royalty owners can realize some income above the small available market without damage to the properties, for if all stripped gas is returned to the formation, no physical waste occurs.

"By promoting the development of the entire area of a field of this type it is very probable that the scattered oil accumulations will be discovered and produced, which otherwise would result in that much physical waste."

In a second petition the company asked for a permit to "repressure the Woodbine formation from the Trinity formation.

"The purpose of the operation is to derive some revenue from the Trinity gas, for which there is very little market, and to help maintain the formation pressure in the Woodbine, which produces both gas and oil.

"There is a great surplus of gas in the Woodbine to supply all available markets for a great many years; therefore, there is no market need for the Trinity gas. Furthermore, after being used to maintain formation pressure in the Woodbine, which produces both gas and oil.

"There is a great surplus of gas in the Woodbine to supply all available markets for a great many years; therefore, there is no market need for the Trinity gas. Furthermore, after being used to maintain formation pressure in the Woodbine, it will be as available for markets as it would be from the Trinity, direct.

"We believe that the fact has been established that there is no crude oil in the Trinity section in the Cayuga field. Three wells have been drilled to test this section. . . ."

The Edens lease is located on the west edge of the field, and well 15 is west of all oil producers in this area.

Tests of this project have been completed. In 38 days ending May 5, 123,634,000 cubic feet of gas was injected into the Edens No. 9 and yielded an average of 19.85 barrels per thousand feet. Maximum input was 6,334,000 cubic feet daily.

Rotan spacing hearing

Ten-acre spacings for wells in the new Rotan field, Fisher County, was advocated by independent operators at a hearing before the Texas Railroad Commission this week. They opposed the plan offered by Tide Water Associated Oil Company providing for 10-acre spacing with only one well on each 20-acre unit.

While Tide Water planned to permit drilling of wells 330 feet from lease lines, they urged that only one well should be drilled on each 20-acre unit. In conjunction with this program, they proposed that the allowable be fixed on acreage times potential with 50 percent allocated on each factor. The application of this plan would result in material reductions in allowables to wells on units of an area smaller than 20 acres.

All operators agreed to the plan suggested in so far as it applied to the requirement calling for 300 feet of surface casing cemented to the surface, and an oil string set at the gas-oil contact and cemented with 200 sacks of cement.

Testimony presented at the hearing indicated that the Rotan field is distinctly separated from the Royston and Howard fields which lie a short distance to the northeast of Rotan.

Decline Long Lake action

At a hearing on the Long Lake field held in Austin last week, the Texas Railroad Commission declined to take any action on the application of Tide Water Oil Company to reduce the maximum gas-oil ration allowance from 10,000/1 to 5,000/1. This program was opposed by F.H.E. Oil Company.

Commission officials based their decision on the fact that no new gas-oil ratio tests had been made since the last hearing was held at which evidence was taken upon which the present order is based.

The commission announced that effective September 15, gas-oil ratio tests should be made on every well in the field, and it is probable that a new hearing will be held when these tests have been completed.

Hauschild hearing set

Application of Derby Oil Company and McPherson Drilling Company for rehearing in the matter of the investigation of the accuracy of potentials, and the taking of potentials, over-production, shortages and the making of rules and regulations regarding the same in the Hauschild pool of Rice

[*See Proration, page 62*]

Miscellany News

Proposed petroleum trade practice code is outlawed by Federal Trade Commission as being illegal.

PROPOSED trade practice rules for the petroleum and petroluem products industry were outlawed in Washington, D. C. by the Federal Trade Commission September 5 in an order voiding the trade practice conference rules adopted in 1931.

In rejecting the proposed "voluntary code" offered under the procedure set up by President Roosevelt following the outlawing of the National Industrial Recovery Act, the commission made public a decision that "in the form presented" it would be "contrary to law and the public interest."

However, the commission added, the industry will be accorded full opportunity to present such amendments of or substitutions for the proposed new rules "as will be in harmony with law."

History of Code

The original "code of ethics" for the industry was approved by the Trade Commission August 10, 1931, and was superseded on August 19, 1933, by the approval of the oil code under the industrial recovery act.

Following invalidation of the code in May, 1935, groups of the industry east of the Rocky Mountains formulated and laid before the commission for approval proposed new trade practice conference rules. A public hearing was held last February, since which time the commission has had the matter under consideration.

"The commission," it was announced, "after fully considering all views presented in writing, all matters presented at the said hearing, and other evidence in its possession, finds that the said trade practice conference rules of 1931 have been treated by the industry generally as of no further force and effect from and after the approval of the N.I.R.A. code, except that certain members of the industry in the Pacific Coast area, and particularly in the state of California, have purported, subsequent to the invalidation of the said N.I.R.A. code, to resume operation under said rules of 1931 as interpreted by them; but that they did not act in accordance with either the letter or the spirit of the said rules, and that their interpretations and activities were without the approval or sanction of the commission.

"The commission concludes that the said trade practice conference rules of August 19, 1931, cannot, in the public interest, be accorded the sanction of the commission; and further concludes that the approval or acceptance of the proposed new rules in the form presented to the commission would be contrary to law and the public interest."

Taxation

Allred wants $15,000,000 and looks toward oil

GOVERNOR JAMES V. ALLRED revealed last week that he expects to increase revenues $15,000,000 per year at the special session of the Texas Legislature scheduled to convene on September 27.

Allred was at odds with a Senate committee which is investigating government costs and whose members contend that there is no necessity for an increase in revenues. In press conferences he vigorously attacks this line of reasoning, and insists that the teachers' retirement fund, the old-age pension fund, and other pension requirements call for the additional funds he seeks.

He declared that the oil pipe line companies operating in Texas are now paying less than their fair share of the taxes. He bases this argument on the fact that they pay only one-fifth of the franchise tax paid by other corporations, because the intangible tax is assessed against them.

The Governor seemed very bitter against both utilities and oil pipe line companies for whose control he has fought since he entered his office.

Oil Comes From Wide Depth Range

Wells produce from levels ranging down to 2 miles . . . But bulk of production is from formations between 1,000 and 7,000 feet . . . Within that range the most prolific zone is at 3,000-4,000 feet.

By L. J. LOGAN,
Associate Editor

ALTHOUGH crude oil is being produced in the United States from levels at the grass roots on down to two miles, most of the production is coming from depths within a considerably narrower range.

The production is relatively small from depths less than 1,000 feet and from depths greater than 7,000 feet. The great mass of the country's production comes from depths between the 1,000 and 7,000 foot levels.

Like the aged and infirm on the death beds, the very shallow production is passing out of the picture; and like the infants in the delivery rooms, the very deep production is more important for its future possibilities than for its present status. Comparable with the active world between the dying and the newly born, the intermediate production at present dominates the scene.

Most Oil from 1000-7000 Feet

The formations lying between 1,000 and 7,000 feet currently furnish 92.5 percent of the total crude oil production in the United States. From depths less than 1,000 feet, the country obtains only 1.7 percent of its oil; and from depths greater than 7,000 feet, only 5.8 percent.

Even within the interval from 1,000 to 7,000 feet, which accounts for 92.5 percent of the country's crude oil production, there is, moreover, a concentration of greater production around middle of the interval; while at the shallower and deeper extremes, the production feathers out.

Three-Fourths from 2000-6000

Thus a narrowing down of the producing zones to those between 2,000 and 6,000 feet still leaves 72.5 percent of the United States production; for the wells from 1,000 to 2,000 feet furnish only 11.8 percent of the country's output, and those from 6,000 to 7,000 feet only 8.2 percent.

Within this interval from 2,000 to 6,000 feet that supplies 72.5 percent of the country's oil, there is a further concentration of largest production around the middle, while the upper and lower sections are less productive.

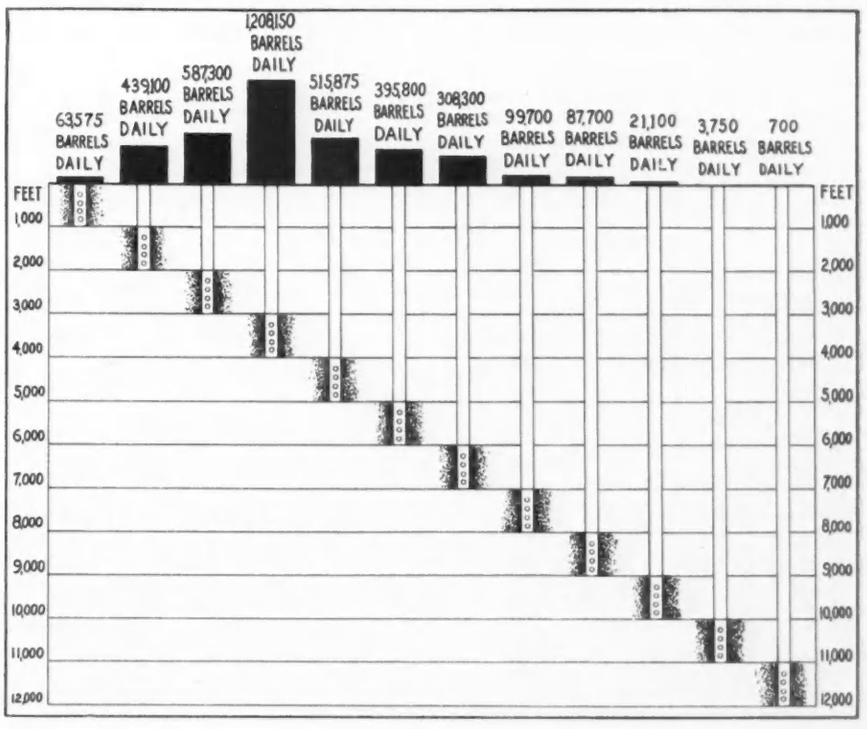
Best Pay at 3000-4000 Feet

Thus the division between 3,000 and 4,000 feet is the most prolific of all the 1,000-foot intervals from the surface on down, yielding 32.4 percent, or approximately one-third, of all production. In the week ended August 21, this year, United States crude oil production averaged 3,731,050 barrels daily, and of that amount, 1,208,150 barrels was from wells 3,000 to 4,000 feet deep. Within the 3,000-4,000 foot intervals lies the pay sand of the East Texas field, which alone produces around 475,000 barrels of oil a day.

The 1,000 foot intervals immediately above and immediately below the 3,000-4,000 foot section produce considerably less than that most prolific zone, but are, nevertheless, the next best producing intervals. Wells from 2,000 to 3,000 feet deep furnish 15.7 percent of the total United States production, and those from 4,000 to 5,000 feet deep, 13.8 percent.

The wells 5,000 to 6,000 feet deep also are fair contributors to the

Daily Production From Various Depths



Daily Production From Various Depths in the United States

(Figures indicate barrels crude oil production daily in week ended August 21, 1937)

STATE OR DISTRICT	Less than 1,000 Feet	1,000 to 2,000 Feet	2,000 to 3,000 Feet	3,000 to 4,000 Feet	4,000 to 5,000 Feet	5,000 to 6,000 Feet	6,000 to 7,000 Feet	7,000 to 8,000 Feet	8,000 to 9,000 Feet	9,000 to 10,000 Feet	10,000 to 11,000 Feet	11,000 to 12,000 Feet	Total All Depths
Arkansas	.....	3,150	23,400	.....	.....	7,000	2,200	.....	.....	.....	.....	...	35,750
California	5,400	76,150	82,550	152,900	112,800	75,900	45,100	56,900	57,000	8,900	1,400	...	675,000
Colorado	.....	1,150	.....	3,950	250	.....	.....	.....	.....	.....	.....	...	5,350
Eastern States	25,400	90,350	8,000	1,000	.....	.....	.....	.....	.....	.....	.....	...	124,750
Kansas	5,000	23,450	29,750	132,700	3,150	.....	.....	.....	.....	.....	.....	...	194,050
Louisiana	700	13,300	16,950	33,450	40,650	91,300	17,750	15,950	21,450	10,450	2,150	700	264,800
North Louisiana	.....	10,500	10,400	.....	.....	63,200	.....	.....	2,700	.....	.....	...	86,800
South Louisiana	700	2,800	6,550	33,450	40,650	28,100	17,750	15,950	18,750	10,450	2,150	700	178,000
Michigan	.....	1,275	6,350	37,875	.....	.....	.....	.....	.....	.....	.....	...	45,500
Montana	.....	6,950	5,600	5,000	.....	.....	.....	.....	.....	.....	.....	...	17,550
New Mexico	1,050	150	200	87,200	25,350	.....	.....	.....	.....	.....	.....	...	113,950
Oklahoma	13,250	61,850	85,600	108,050	155,650	21,200	196,050	11,950	.....	.....	.....	...	653,600
Southeastern States	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	...	.....
Texas	10,975	144,825	321,050	620,525	175,425	194,150	47,200	14,900	9,250	1,750	200	...	1,540,250
East Texas Field	.....	.....	.....	472,400	.....	.....	.....	.....	.....	.....	.....	...	472,400
Rest of East Texas	300	300	37,500	9,900	42,050	20,000	18,400	.....	.....	.....	.....	...	128,450
North Texas	100	57,500	6,250	2,000	9,400	.....	.....	.....	.....	.....	.....	...	75,250
South Texas	3,500	20,700	95,850	9,400	73,000	50,650	19,200	1,200	.....	.....	.....	...	273,500
Texas Gulf Coast	3,300	4,150	6,750	27,400	29,300	123,500	9,500	13,700	7,000	1,750	200	...	226,550
Texas Panhandle	.....	.....	36,950	50,700	.....	.....	.....	.....	.....	.....	.....	...	87,650
West Texas	3,600	45,500	127,450	42,175	21,675	.....	100	.....	2,250	.....	.....	...	242,750
West Central Texas	175	16,675	10,300	6,550	.....	.....	.....	.....	.....	.....	.....	...	33,700
Wyoming	1,800	16,500	7,850	25,500	2,600	6,250	.....	.....	.....	.....	.....	...	60,500
Total United States	63,575	439,100	587,300	1,208,150	515,875	395,800	308,300	99,700	87,700	21,100	3,750	700	3,731,050
Percent of U.S. Total	1.7	11.8	15.7	32.4	13.8	10.6	8.2	2.7	2.4	0.6	0.1	0.02	100

country's oil output, furnishing 10.6 percent of the total.

Average Well 3225 Feet Deep

While the heavy production from depths of 3,000 to 4,000 feet is due in part to the large output of the East Texas field, that interval still would rank as the No. 1 producing section even without including East Texas.

The fact that the 3,000-4,000 foot section is unusually productive confirms information in THE OIL WEEKLY of August 30, 1937, page 31, indicating that the average depth of wells completed in the United States this year has been 3225 feet per well.

Practically all of the major producing states and districts now have production from depths down to 4,000 feet; but below that level, fewer districts are represented.

Producing from 11,630 feet, the Lirette field, Terrebonne Parish, Louisiana Gulf Coast, not only is the deepest producing field in the world, but also is the only one represented with production between 11,000 and 12,000 feet.

Qualifying for production from depths of 10,000 to 11,000 feet, however, are not only the Louisiana Gulf Coast, but also California and the Texas Gulf Coast.

In addition to Lirette, there are two other fields of the Louisiana Gulf Coast with production from depths below 10,000 feet; namely, Horseshoe Bayou and Lafitte.

The California fields with production from below 10,000 feet are Kettleman Hills and Ventura Avenue.

Deep Production Small

All the production from below 10,000 feet aggregates, however, only a few thousand barrels daily, or about one-tenth of one percent of the United States production.

And even when the production from the 9,000-10,000 foot zone is added, the total still is under 1 percent of the national output.

Production from 8,000 to 9,000 feet is of greater importance, amounting to 87,700 barrels daily, or 2.4 percent of the total United States production.

Deeper Fields of the United States

Showing barrels crude oil production daily (for week ended August, 21, 1937) from pay zones below 7000 feet

FIELD	7,000 to 8,000 Feet	8,000 to 9,000 Feet	9,000 to 10,000 Feet	10,000 to 11,000 Feet	11,000 to 12,000 Feet
***California:**					
Belridge, North	10,600	....	....	....	...
El Segundo	9,050	....	....	....	...
Greeley	1,200	....	....	....	...
Kettleman, North Dome	19,000	46,000	6,900	1,000	...
Long Beach	5,000	2,000	....	....	...
San Miguelito	750	....	....	....	...
Santa Fe Springs	3,000	....	....	....	...
Seal Beach	300	....	....	....	...
Ten Section	.....	2,900	....	....	...
Ventura Avenue	8,000	6,100	2,000	400	...
Louisiana, North:					
Cotton Valley	.....	2,700	....	....	...
Louisiana, South:					
Bayou Mallet	225	....	....	....	...
Big Lake	.....	225	....	....	...
Bosco	350	8,450	100	....	...
Evangeline	750	200	....	....	...
Gibson	.....	....	750	....	...
Gillis	12,800	....	....	....	...
Hackberry, East	500	....	....	....	...
Horseshoe Bayou	.....	....	....	225	...
Jeanerette	1,000	....	....	....	...
Lafitte	350	....	9,350	2,150	...

FIELD	7,000 to 8,000 Feet	8,000 to 9,000 Feet	9,000 to 10,000 Feet	10,000 to 11,000 Feet	11,000 to 12,000 Feet
Louisiana, South, continued:					
Lake Long	.....	....	650	....	...
Lirette	.....	.....	.....	....	250
Roanoke	900	3,800	....	....	...
Sweet Lake	200	....	....	....	...
Tepetate	.....	6,300	....	....	...
Oklahoma:					
Moore	11,950	....	....	....	...
Texas, Gulf Coast:					
Anahuac	13,050	....	....	....	...
Barbers Hill	500	....	....	....	...
Bay City	300	1,900	....	....	...
Buckeye	125	....	....	....	...
Dickinson	.....	4,500	750	....	...
Esperson	250	....	....	....	...
Gillock	.....	1,700	....	....	...
Old Ocean	.....	1,050	....	....	...
Satsuma	350	....	....	....	...
Texas, South:					
Aransas Field	880	....	....	....	...
La Blanca (Hidalgo County)	240	....	....	....	...
Mercedes Field	80	....	....	....	...
Texas, West:					
Big Lake (Reagan County)	.....	2,250	....	....	...

* Estimated where actual figures were not available.

Outlook Good Despite August Record

Industry continues in strong statistical position, although August brought excess output of wells and refineries . . . September control expected to restore supply and demand balance.

By L. J. LOGAN,
Associate Editor

ALTHOUGH recent weeks have brought excessive production of crude oil and greater refinery output than necessary, no serious damage has been done to the oil industry's strong statistical position; and the outlook for the immediate future lately has been improved by a tightening of the reins on the wells and refineries.

This month is bringing smaller and better justified crude production, under stricter allowables of the leading producing states; and the smaller crude oil output probably will tend to hold refinery operations more closely in line with market requirements.

It is indicated, therefore, that for September there will be a successful balancing of both crude production and refinery activity with demand, and that the industry consequently will go through the month fully maintaining its favorable inventory situation.

August Brought Excesses

Such success was not achieved in August, however, largely because crude production allowables for that month were comparatively lax, resulting in excessive output at wells and refineries. The excesses were manifested in some running of crude oil to storage and in record-breaking activity at refineries that resulted in greater than normal production of gasoline. The excessive output of gasoline showed up in the fact that gasoline stocks were not drawn upon to a normal extent in August.

Likewise, there was a greater than normal output of fuel oil, resulting in larger than seasonal additions to fuel oil stocks. But the fuel oil inventories lately have been comparatively low, in view of the prevailing strong demand, and recent building up of the stocks apparently has been fully justified.

The excesses of crude production and refinery output in August were reflected not only in the statistics of the industry but also in a more concrete manner in the market conditions. The markets for both crude and refined oils developed an unsteadiness from which they still have not fully recovered, and some actual price reductions undoubtedly were caused at least in part by the over-supplies at wells and refineries.

Hope prevails generally now that the crude price structure will not show any further weakening, following the reductions of postings in various districts of the country, including the Eastern States, Michigan, the Gulf Coast, and Turner Valley field, Canada. Those reductions reflected local over-supplies of crude, as well as the general market conditions, and it now is expected that present crude postings can be maintained generally as long as crude control continues as effective as at present.

Refined Prices Unsteady

Similarly, the refined oil markets developed weakness in various districts in August, as the supplies turned out at the refineries were exceeding even the record-breaking demand of the consumers.

The gasoline market has not relinquished much ground, however, and the unsteadiness that has prevailed has not been translated into actual declines of prices except in some minor instances. In the East Texas refining district, for instance, there has been some lowering of gasoline tank car prices by refiners, and that situation has led to retail price cutting in various sections of Texas, Oklahoma, and other adjacent states.

The retail gasoline markets have been disturbed, also, in some other sections of the country. In the Pittsburgh area, for instance, a serious price war was in progress for over a month, but it finally has been terminated.

The stricter control of crude oil production that now prevails probably will have a steadying effect

Demand and Inventory Situation

DEMAND

PERIOD	Demand for All Oils (Barrels)	Domestic Gasoline Demand (Barrels)
First 6 mos., 1937	639,629,000	243,730,000
First 6 mos., 1936	575,695,000	220,961,000
Change this year	+63,934,000	+22,769,000
Percent change	+ 11.1	+ 10.3
June, 1937	113,122,000	48,580,000
June, 1936	102,700,000	45,484,000
Change this year	+10,422,000	+3,096,000
Percent change	+ 10.1	+ 6.8

STOCKS OF ALL OILS

DATE	Barrels on Hand	Days' Supply
July 1, 1937	550,685,000	146
July 1,1936	550,296,000	161
Change in Year	+389,000	—15
Percent change	+ 0.0	

CRUDE OIL STOCKS

DATE	Barrels on Hand
August 28, 1937	309,506,000
July 31, 1937	308,250,000
Change in August	+1,256,000
August 28, 1937	309,506,000
August 29, 1936	301,786,000
Change in past year	+7,720,000
Percent change in past year	+ 2.6

REFINED OIL STOCKS

DATE	Gasoline (Barrels)	Gas & Fuel (Barrels)
September 4, 1937	67,048,000	113,443,000
August 28, 1937	66,997,000	112,111,000
July 31, 1937	70,872,000	108,209,000
Change: July 31 to Sept. 4	—3,824,000	+5,234,000
September 4, 1937	67,048,000	113,443,000
September 5, 1936	58,493,000	111,281,000
Change in past year	+8,555,000	+2,162,000
Percent change in past year	+14.6	+1.9

on both refinery and retail prices of gasoline and other products.

Earnings Are Good

The better conditions prevailing this month are tending to maintain earnings of oil companies at previous favorable levels, as prices are holding up generally, while the demand for petroleum continues at record-breaking proportions. The good prices and the large volumes of business are expected to make the third quarter of this year one of the most profitable, if not actually the best, of all the three-month periods ever experienced by the industry.

It now is indicated that the oil company earnings for the whole year 1937 will be between 40 and 50 percent larger than those of 1936, or about the same as in 1929, the best year on record.

Production at Peak

Under the liberal allowables that prevailed, United States crude oil production in August was the greatest ever recorded in any month, totaling 114,891,500 barrels. For the month, the output thus averaged 3,706,177 barrels daily.

While that unprecedented production was not wholly justified by consumer demand, there proved to be need for a greater part of it than some of the experts had predicted, the demand having exceeded official forecasts. The August actual production was 243,277 barrels a day above the Bureau of Mines estimate of market demand.

Wells Completed in the United States (Daily Average)

(Including Oil Wells, Gas Wells, and Dry Holes)

MONTH	1933	1934	1935	1936	1937
January	30.0	39.7	47.9	52.4	66.1
February	30.6	38.1	49.6	51.6	58.6
March	26.6	40.6	48.8	60.6	70.4
April	25.5	44.0	58.5	69.2	78.1
May	25.6	50.7	63.6	71.9	80.8
June	21.1	51.5	58.6	70.9	89.5*
July	23.1	53.6	60.9	66.6	88.1
August	30.7	51.3	62.8	70.4	86.2
September	36.5	43.2	57.9	65.4	....
October	40.9	49.6	57.1	67.8	....
November	46.9	49.9	55.2	67.7	....
December	47.7	48.3	54.2	67.7	....

* Most drilling in many years, surpassing even the peak of the 1920's, that was reached in September, 1926, when completions averaged 88.6 wells daily, with 2480 completions reported in a 28 day period.

If that forecast had been fulfilled, the actual production would have been about 7,500,000 barrels above requirements. But the excesses that occurred were not that great.

Output Above Demand

Nevertheless, the production for August apparently was several million barrels above requirements. For over 1,000,000 barrels of crude oil went into storage, while considerable crude went through the refineries in excess of immediate needs.

The crude stocks in the United States increased 1,256,000 barrels from July 31 to August 28, and on the latter date stood at 309,506,000 barrels. Some additional crude probably went into the storage tanks, moreover, in the closing days of August.

Crude Stocks Satisfactory

The crude stocks situation remains, nevertheless, comparatively good. The inventories on hand August 28 were only 7,720,000 barrels, or 2.6 percent larger than those held one year previously, while the demand for petroleum has been running this year around 11 percent higher than last year.

Since withdrawals from gasoline storage in August were below normal, because of the large current output at the refineries, the inventories now are somewhat larger than justified. The gasoline stocks on September 4 aggregated 67,048,000 barrels. That was 14.6 percent more gasoline than the industry had on hand a year ago, whereas gasoline demand has been only about 10 percent larger this year than last year.

Drilling Activity Great

Drilling has continued unusually heavy. Completions in August averaged 86.2 wells daily. That average was only slightly smaller than the one for July, and was not far under the peak of the year, reached in June, when completions averaged 89.5 a day, the most for many years.

In the first 8 months of this year, 18,960 wells were completed, or 18.9 percent more than the 15,943 finished in the similar period last year.

Drilling and Production in August, 1937, and in First 8 Months of 1937 and 1936

STATE OR DISTRICT	*AUGUST, 1937, COMPLETIONS AND CRUDE OIL PRODUCTION						COMPLETIONS AND PRODUCTION IN FIRST 8 MONTHS, 1937 AND 1936									
							WELLS COMPLETED			DETAILS OF 1937 COMPLETIONS				BARRELS PRODUCTION		
	Total Wells	Oil	Gas	Dry	Initial Production	Production for August	1937: 8 Mo.	1936: 8 Mo.	Percent Change	Oil	Gas	Dry	Initial Production	1937: 8 Mo.	1936: 8 Mo.	Percent Change
Arkansas	21	12	1	8	3,753	1,060,200	69	70	— 1	26	2	41	7,728	6,855,150	7,256,300	— 5
California	139	114	...	25	47,885	20,850,800	1,005	752	+ 33	786	11	208	396,704	153,106,500	143,889,477	+ 5
Colorado	2	...	1	1	.....	159,300	8	8	.....	1	1	6	2,400	1,036,700	1,105,450	— 6
Eastern States	389	140	153	96	13,758	3,866,400	2,151	2,060	+ 4	668	942	541	34,083	28,705,550	26,073,700	+ 10
Kansas	286	218	17	51	256,511	6,153,150	1,732	1,086	+ 59	1,261	77	394	1,602,921	46,061,800	36,603,850	+ 26
Louisiana	131	79	20	32	39,895	8,150,200	609	678	— 10	391	54	164	183.385	60,936,850	51,773,450	+ 18
North Louisiana	73	41	19	13	20,758	2,718,600	286	391	— 27	190	42	54	77,892	19,097,900	17,102,750	+ 12
South Louisiana	58	38	1	19	19,137	5,431,600	323	287	+ 13	201	12	110	105,493	41,838,950	34,670,700	+ 21
Michigan	97	65	7	25	26,284	1,419,300	604	513	+ 18	385	56	163	182,195	9,683,750	8,497,300	+ 14
Montana	27	18	6	3	1,777	558,950	124	99	+ 25	95	12	17	7,852	4,013,650	3,574,400	+ 12
New Mexico	72	61	3	8	37,854	3,536,000	473	380	+ 24	432	17	24	651,148	25,915,550	16,464,500	+ 51
Oklahoma	291	210	8	73	140,813	20,105,200	2,111	1,960	+ 8	1,499	91	521	1,745,122	153,231,800	130,717,300	+ 17
Southeastern States	5	...	...	5	.....	.....	12	9	+ 33	.....	....	12	.....	.....	.....	....
Alabama	...	...	...	...	.....	.....	1	2	— 50	.....	....	1	.....	.....	.....	....
Florida	1	...	...	1	.....	.....	1	1	.....	.....	....	1	.....	.....	.....	....
Mississippi	4	...	...	4	.....	.....	10	6	+ 66	.....	....	10	.....	.....	.....	....
Texas	1,544	1,187	31	326	1,890,454	47,226,150	9,990	8,276	+ 21	7,557	312	2,121	10,909,185	337,691,950	274,364,000	+ 23
East Texas	249	238	...	11	1,293,948	14,637,250	1,505	1,933	— 22	1,450	2	53	6,855,722	111,758,350	106,625,600	+ 5
Rest of East Texas	104	90	4	10	51,459	3,962,850	710	293	+142	611	29	70	387,003	28,650,800	12,680,450	+126
North Texas	228	125	5	98	23,877	2,326,300	1,612	1,454	+ 11	855	20	737	158,733	17,141,000	14,292,200	+ 20
South Texas	376	264	4	108	95,672	8,402,400	2,458	2,140	+ 15	1,717	85	656	689,690	55,507,050	19,119,950	+138
Texas Gulf Coast	163	127	3	33	56,453	6,983,100	1,020	756	+ 35	758	48	214	308,666	48,950,300	58,229,700	— 16
Texas Panhandle	79	63	13	3	33,103	2,501,800	490	437	+ 12	373	100	17	186,380	18,718,150	14,916,500	+ 25
West Texas	314	264	2	48	334,941	7,368,500	1,906	954	+100	1,674	9	223	2,314,153	48,940,900	42,298,050	+ 16
West Central	31	16	...	15	1,001	1,043,950	289	309	— 6	119	19	151	8,838	8,025,400	6,201,550	+ 29
Wyoming	13	3	3	7	511	1,805,850	72	52	+ 38	44	6	22	32,578	12,734,850	8,864,500	+ 44
Total United States	3,017	2,107	250	660	2,459,495	114,891,500	18,960	15,943	+18.9	13,145	1,581	4,234	15,755,301	839,974,100	709,184,227	+ 18.4

*August completions cover not the calendar month, but the 5 weeks, or 35 days, ended August 28.

Plugging Back May Make Smackover Wells Profitable

By BRAD MILLS, Associate Editor

PLUGGING back operations in the Smackover, Arkansas, field are gaining momentum and several companies will attempt to increase production of oil in old wells by locating more favorable producing levels. In many of the weakest wells producing from the deeper formations, little can be lost by plugging back and feeling for a more satisfactory pumping level. An appreciable reduction in water production and an increase in oil recovery may convert unprofitable wells into satisfactory pumpers.

Many wells in the field are approaching the absolute water limit, beyond which they must be abandoned or operated at a loss. Field production now averages 96 percent water, making it necessary to lift almost 500,000 barrels of fluid daily to obtain less than 20,000 barrels of oil. The water percentage has become so high in many wells that only the production of a tremendous fluid volume prevents operation at a loss.

The strong demand for all grades of Smackover crude has prompted operators to adopt programs that will flatten the field decline and provide stocks for refineries designed to use this oil. The asphalt and lubricating oils made from Smackover crude are excellent products, and the decline of the field has affected refinery operations in the district. They are looking forward to modern remedial methods stopping the decline, although plugging back operations in the field will be difficult.

Well records for early completions are uniformly poor, reflecting the hasty, careless development in vogue during the rush that made Smackover a great producing field. It has been difficult to get much useful information from well logs that were sketchy, inaccurate and incomplete, but through correlation it has been possible to make good guesses as to a better producing level.

Survey Started

Two of the largest operators recently started a surveying program to determine the condition of the troublesome wells. These wells are being surveyed to check their deviation from vertical, as an aid in plugging back operations. Surveys have shown that many wells are so crooked that it would be possible to miss the objective level in plugging back, since the depth of the producing zones from the surface are reckoned in a vertical line. Where an upper 10-foot stratum is the objective, the difference between the actual depth of the well and the accepted vertical depth to the objective level may be enough to place the perforations too high. This apparently was done in a recent well that was plugged back with poor results. In surveying the wells, the direction of the drift from vertical usually is not considered, since the chief aim is to plot the actual depth against the true vertical depth to the bottom of the hole. The loss in vertical depth caused by deviation from vertical, rather than direction of drift, is most important.

Coring Is Aiding

Electrical logging and coring devices for determining the nature of formations behind casing have proved helpful in efforts to find a more satisfactory producing level. The running and checking of these instruments has been an important part of the preliminary program ahead of actual plugging back work in several wells. This practice has served as a check on the loss in vertical depth because of deviation of the hole. Future plugging back of wells will be preceded by a more careful surveying program than has been carried out in the past.

Plugging Back Program

Several factors enter into the plugging back program. One company recently attempted to check operating costs on all its producing wells. The preliminary report indicated that many active wells were barely paying their way, while a few actually were operated at a loss for the sake of a necessary daily production.

Before recommending remedial or plugging back work, the possibility of failure was considered. With good luck it appeared possible to plug back a number of wells from the Graves or third zone to the Meakin or Nacatoch. There was little to lose and more to gain through attempts to increase the percentage of oil lifted with the fluid. Several wells were producing almost 99 percent water while under observation, but experience with offset wells producing from shallower zones gave hope for success in plugging back to exclude a portion of the troublesome water.

Plugging back involves problems not encountered in fields showing a small amount of water or in fields showing only bottom water. Water encroachment at Smackover has affected every producing level, and there is no assurance that plugging back will give a production of clean oil. The chief aim in plugging back is to obtain an increased yield of oil and a smaller yield of water. More than one shallower producing level usually is considered before plugging back operations are started, since poor well records in the wells involved offer a weaker guide than the known performance at higher levels in offset wells.

To Cement Off

Apparently, the methods to be generally favored at Smackover in plugging back wells will be those that

permit the placing of cement at desired levels. The shutting off of water at different levels will be a necessity because of the field's characteristics.

The origin of water in many of the most troublesome wells has been a puzzle. The condition of the casing in such wells usually is not known before tests are made during plugging back work, although more intelligent efforts will be made in the future to locate the origin of water ahead of repair work. In many wells smaller strings of casing have been run inside the original 6⅝-inch oil strings in an effort to shut off water of unknown or questionable origin. The corrosive nature of formation water has damaged casing in all parts of the field.

Difficulties Expected

A study of a well recently plugged back and worked over by a large operator reflects the difficulty that may be encountered in this type of work. Before the repair work was started, the well was pumping 10 barrels of oil and 785 barrels of water daily from the original depth of 2385 feet. The water was believed to be coming from around the original 6⅝-inch casing string. A string of 4½-inch casing had been run in 1935 as a protection against water that might have been coming through the faulty 6⅝-inch oil string.

This well was cleaned out to 2321 feet and the casing ripped at 2300-2301 and 2295-2296 feet. A cement retainer was set at 2270 feet and a 187-sack batch of cement pumped through. The casing was bailed for a leak and the cement drilled out from 2148 to 2315 feet. The casing was perforated with a gun at 2308 to 2314 feet, the hole bailed to 2316 feet and the cement drilled out to 2325 feet. A hole was found at 66 feet in the 4½-inch casing. After cementing through at that depth, another leak was found at 1716 feet in the 4½-inch string. This leak was corrected with 200 sacks of cement. The casing was bailed and found dry, but after cleaning out to 2317 feet a leak was found in the 4½-inch casing at 110 feet. After squeezing through seven sacks of cement to stop this leak, the upper cement was drilled out and the plug drilled from 2307 to 2319 feet. The casing was perforated with a gun at 2315-2316 feet and the hole cleaned out to 2319 feet. The well was put back on the pump and produced 18 barrels of oil and 580 barrels of water daily.

Although the production of oil was almost doubled and the water reduced, the company was not satisfied with results. The repair job required almost five months to complete, and the increase in oil production was not as much as was expected. All the equipment functioned satisfactorily, and the limited improvement in producing conditions probably should be attributed to the nature of the formation at the perforation points. The company has studied the performance of the well, and by using it as an example has concluded that plugging back at Smackover will be accompanied by all types of risks.

Three Types of Wells

Smackover wells might be placed in three groups to illustrate the oil-water ratio. In the first or most satisfactory group of producers, a typical well is one pumping 25 barrels of oil and 100 barrels of water. In the second or more representative type of well, a typical producer pumps 20 barrels of oil and 400 barrels of water. In the third or least satisfactory group of wells, the typical producer pumps 10 barrels of oil and 1000 barrels of water.

Operators are now concerned with the improvement of the "one to one hundred," or the 99 percent water wells. A fluid lift of 1000 barrels to obtain 10 barrels of 90-cent oil is out of line with sound economics. While there is no assurance that a large production of oil will be obtained by plugging back, little can be lost in the effort. Where reasonable care is exercised and a study is made of offset producing levels, the 10-barrel well may be converted into a 20-barrel well, less a large quantity of water.

Water produced with the oil at Smackover is very corrosive. Floating sand gives endless trouble in wells producing the heaviest oil. The oil ordinarily separates readily from the water, and because of the absence of a serious treating problem very small wells can be operated at a profit. A high cut of b.s. usually denotes a poor mechanical condition, and one company promptly repairs wells when this cut exceeds five percent.

The pumping loads, when considered from a volume and torque standpoint, are excessively heavy. When all factors are considered, the loads are greater than at Oklahoma City. It is largely because of the high lifting cost that operators are seeking relief through repairs and plugging back operations.

The plugging back program is still in its early stage, but in many of the deeper producers there is much to gain and little to lose in attempting to produce from higher levels.

Producing Horizons

Smackover produces oil from shallow sands between 1975 and 2600 feet. Principal production comes from three zones between 2000 and 2400 feet, and profitable operation of many wells is possible only because of the shallow producing depths. In a well producing 15 barrels of oil and 1000 barrels of water, depth is an important economic factor.

The lifting cost for the field is very high, ranging from 40 cents per barrel on the best leases to more than 65 cents per barrel on the troublesome tracts. When depreciation and depletion are considered, many wells now on production fall in the unprofitable column. All sight of original investment or depletion has been lost on many leases that continue to produce enough oil to show an apparent day-to-day profit.

The Nacatoch is the first producing zone, and the completion depth in this sand ranged from 1975 to 2125 feet. The Meakin (Primm) sand, found between 2230 and 2360 feet, is the second producing zone for most of the field. The Graves sand, third producing zone, is found between 2330 and 2500 feet. These three sands have been the chief source of production in the field.

The Nacatoch sand is a series of sandy lenses, shales and sandy limestones, and it is productive over most of the field. Some of the completions in this sand had an initial production of 25,000 barrels daily. The oil is 20 gravity. The Meakin sand has an average thickness of 55 feet, but it is not uniformly productive over the field. It yields oil or gas in the northwest part of the field and chiefly dry gas in the east part. This sand is one body in some places and a series of sands in others. Gravity of the oil is about 25 degrees. The Graves sand is around 35 feet thick, and some of the first completions flowed from 20,000 to 65,000 barrels daily. The oil is a 21 gravity product. Sand lenses below 2500 feet also produce oil and gas in limited quantities.

Plugging back operations chiefly affect the Nacatoch, Meakin and Graves sands. Although oil above 23 gravity at Smackover is called "light," the loss or gain in gravity through plugging back is not as important as the gain in production of oil or the reduction in percentage of water.

ADVANTAGE OF LARGE CASING IN

Gas-Lift Operations

IN OKLAHOMA CITY FIELD

By S. F. SHAW, Consulting Engineer, Hall & Briscoe

DURING the early period of development in the Capitol area of the Oklahoma City field, three drilling blocks were acquired by Hall and Briscoe and associated interests, and a program was laid out for handling the operations in the early stage of development.

One of the blocks is in an area where wells already had been completed with high potentials, accompanied by large quantities of gas, consequently it was considered advisable to complete this well with 9⅝-inch casing in order to establish a high potential. The other two drilling blocks are about two city blocks farther west, down the dip of the producing Wilcox sand, and were not expected to have much free gas, owing to their locations on the structure and to low bottom-hole pressures in this area. It was not believed that potentials could be established as high as in the first well, since the well high on the structure could be expected to flow naturally without a tubing string in the well. However, it was considered advisable to complete these two down-dip wells with casing of 9⅝-inch even though nearly all of the offset wells were being completed with 8⅝-inch casing.

Compressor Plant

Decision having been reached as to the sizes of casing, it was considered necessary to build a gas-lift plant while the wells were being drilled in order that the plant might be ready for use when drilling-in the wells, by circulating oil and gas instead of drilling-in with mud. It was also considered advisable to be prepared to use gas-lift for producing one or both of these down-dip wells as soon as they were completed.

The compressor plant was designed so that sufficient gas would be available for drilling-in one well at a time, and later for producing at least one well at maximum capacity. For this purpose it was necessary to consider the quantity of gas that would be required to lift the oil through a casing of 9⅝-inch diameter.

The plant was located one block north of the State Capitol, and it was, therefore, necessary to avoid a noisy exhaust, and, so far as possible, to avoid vibration. With these factors in view, the plant was designed to contain four 260-h.p. four-cycle compressors, operating at 300 R.P.M., of a type that reduces noise and vibration and which has sufficient capacity for handling one well while drilling-in, and also sufficiently large to produce one well at maximum capacity when the well is at its peak load.

Cost $74,500

The four compressors have a combined capacity of about 5,000,000 cubic feet of gas per day at atmospheric intake and at 400 pounds discharge pressure; or a capacity of 7,000,000 cubic feet of gas per day at intake pressure of 20 pounds and at 400 pounds discharge pressure. The cost of the plant was approximately $70,000, with an additional cost of $4,500 for pipe lines to the wells, including the meters along the lines.

Specifications

On each unit there are two low-pressure compressor cylinders, 14-inch diameter by 12-inch stroke, and two cylinders, 6-inch by 12-inch, for the high stage. Each engine has eight 11-inch by 12-inch power cylinders.

The intake header is 16-inch diameter, with two intermediate-pressure headers of 12-inch diameter. The high-pressure header is 6-inch diameter. The water intake is 6-inch diameter, and the water discharge header is 8-inch diameter, which header is so elevated that the water in passing to the cooling tower does not make any downward turn in which air or vapor might collect. A 2-inch centrifugal circulation pump, one of which is mounted on each compressor frame, pumps water through the jackets of the compressor cylinders and through the power cylinder jackets, and then through the 8-inch discharge header to the water cooling tower, whence it drips over two sections of cooling coils into a 1000-barrel storage tank. The cooling tower is 21 feet in height, with capacity of 600 G.P.M. There are two sets of intercooler coils of the atmospheric type with combined area of 912 square feet, each section containing 92 tubes, 1-inch diameter by 19 feet in length.

Route of Intake Gas

The intake gas is admitted by a 6-inch regulator to a 4-foot by 10-foot scrubber tank formerly used as a separator at a well, the gas then going to the low pressure intake header and to the low-pressure cylinders on the compressors, and then to the intercooler coils. From the intercooler coils, the gas passes to a 3-foot by 7-foot intermediate scrubber, then to the intermediate header and through the high-pressure cylin-

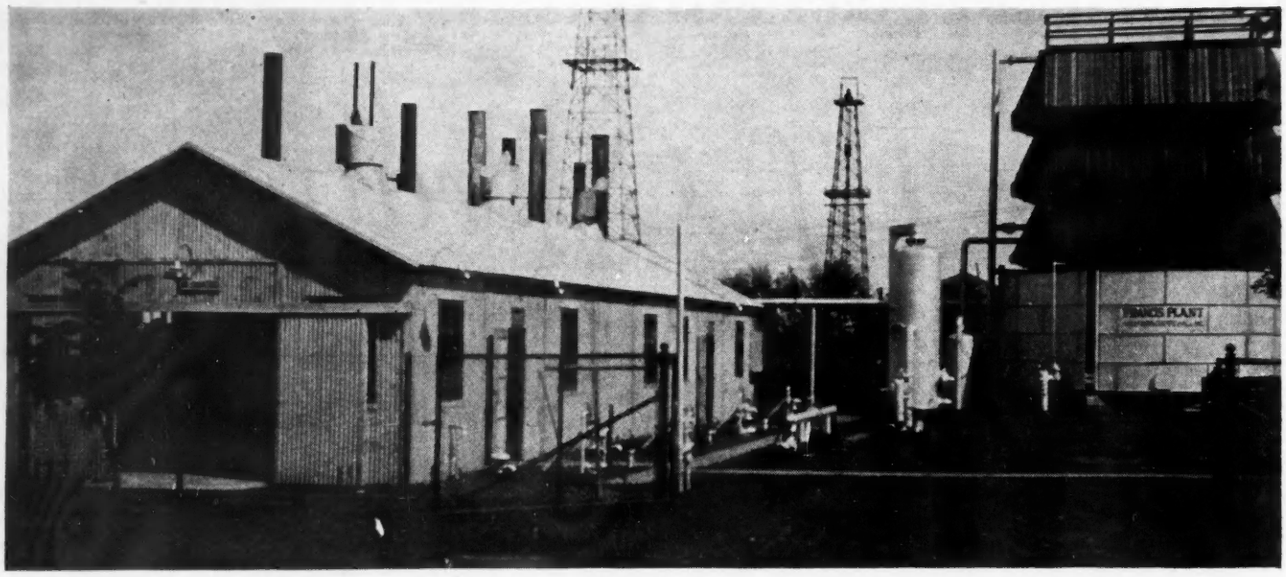


FIGURE 1
Gas-Lift plant of Hall & Briscoe in Oklahoma City field.

ders, and finally reaches the high-pressure discharge header.

From the high-pressure discharge header, the gas passes through a meter loop at the plant, with orifice meter installed inside the compressor building. The gas is then distributed through a 4-inch welded line, tested to 2000 pounds per square inch on cold water test, to the three wells, where it is measured through orifice meters before being admitted to the wells. Fuel gas for the engines passes through a 2-inch regulator to an 8-inch fuel gas header, and is then distributed to each individual engine through a 2-inch super-sensitive low-pressure regulator.

Valve Frame Lifters and Clearance Pockets

Each of the low-pressure compressor cylinder is provided with a valve-frame lifter which can be adjusted in a few seconds so that gas will be compressed on only one stroke of the piston. Each low-pressure cylinder is also provided with a clearance pocket to permit finer adjustment of the load being handled by the engine. In this way, full advantage can be taken of any ordinary range of intake pressure on the intake header, and at the same time permits the discharge pressure to reach a maximum without seriously overloading the engine. A view of the plant is shown in Figure 1.

The gas discharged with the oil from the well passes through a 7-foot by 22-foot separator to the output orifice meter, then to the gathering line whence it goes to the Phillips gasoline plant for extraction of the gasoline. The dry gas is then returned through the residue line to the gas-lift plant.

Measured Three Times

An orifice meter measures the gas before it enters the intake header. It is then measured through a master orifice meter as it leaves the plant, and it is again measured as it goes to each well. By means of these various meters, complete record is available of the gas supplied to each well, together with a record of the gas produced by the well. Input and output gas factors, and formation gas-oil ratios are, therefore, readily, determined at all times. A set-up of the input and output meters is shown in Figure 2.

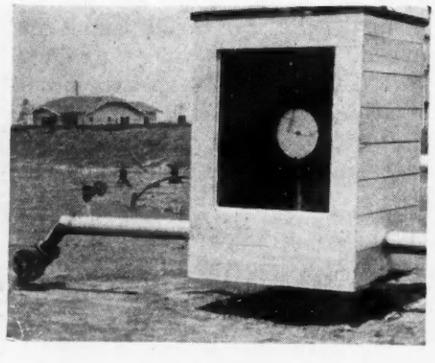
The gas passing from the plant to the wells is hot, that is, about 150°F., and tends to lessen the deposition of paraffin on the casing. It also thins the oil and increases the lifting efficiency. On the other hand, the gravity of the oil is reduced by ½° to 4° by reason of the use of hot gas.

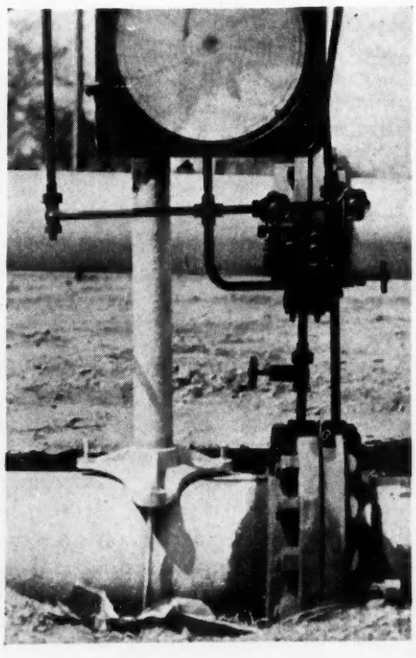
On each input meter loop a box is installed to prevent rain from leaking through the meter window and injuring the chart. This box also insulates the loop at the meter, thus retaining sufficient heat during the winter months to prevent freezing of the meter. A thermometer well is set in each input meter loop to expedite more accurate gas measurements.

The quantity of gas on a 2-pound pressure base produced by the plant

FIGURE 2

Below: Input meter with housing and thermometer well; at right: output meter.





since it was installed is given in Table 1.

Gas employed for gas-lift purposes in the Oklahoma City field is usually sold on basis of 8 cents per thousand cubic feet at 2-pound pressure base. A book account was set up against each well serviced to determine the charge against each well, and to determine when the plant was paid out on this basis of charge. Three outside wells were produced with gas from this plant for several months before it became necessary, because of insufficient capacity, to confine the use of gas to two wells of the Hall and Briscoe interests.

Early Pay-Out

The total cost of the plant, including operating expense, was paid out by the end of July, 1937, disregarding the salvage value that the plant may have after its use at this site is discontinued. The probable salvage will be about 40 percent of the original cost. The actual cost per barrel of oil lifted for depreciation and for operation will not be known until the wells are abandoned, the plant removed, and salvage value determined. At that time the cost per barrel for compressed gas can be accurately determined.

An estimate at the present time might be approximated by assuming the salvage value of the plant at $28,000, and $1800 for the pipe lines, meters, etc., or a total of $29,800; that the oil yet remaining to be lifted by the plant will amount to 200,000 barrels, with average consumption of 10,000 cubic feet per barrel, costing 1 cent per thousand to compress the gas; and that the total quantity of oil lifted from this plant will approximate 750,000 barrels. On this basis the total cost for gas would be as follows:

	Total	Per Bbl.
Original cost of plant and pipe lines	$74,400	
Less salvage	29,800	
Depreciation chargeable to oil lifted	$44,600	$0.06
Operating cost to July 1, 1937	20,000	
Additional operating cost to abandonment	20,000	
Total operating cost	$40,000	$0.053
Total cost for gas to lift 750,000 barrels	$84,600	$0.113

Future charges for gas can be made on basis of actual operating cost, if so desired, which in the case of the Francis plant is about 1 cent per thousand cubic feet.

Drilling-In Operations

The three wells were completed with gas supplied from the Francis plant under pressure of about 450 pounds at the well orifice meter. A fourth well of an outside company was also drilled in with gas from this plant. The pressure at the bottom of the wells was approximately 400 pounds at this time. Perfect control of the drilling-in operations was maintained at all times. It was possible to determine from the orifice meters and from the tank gauges the point where the best pay streaks were encountered. It was found that the first 40 feet of sand contained little oil but considerable gas, and after this point was passed, the sand became softer and more permeable, and the production of oil was considerably increased.

The Francis and Villa wells were drilled about 80 feet into the sand. It was thought advisable not to drill too deep, owing to the possibility of approaching too close to the water level.

Potentials

Potentials were established on the wells as soon as the drill pipe was removed from the well, and after 3-inch tubing was run into

TABLE 1

Gas Compressed by the Francis Compressor Plant

MONTH	Thousands of Cubic Feet of Gas Compressed	Revenue to the Plant at 8 Cents per 1,000 Cubic Feet
June, 1936	26,432	$ 2,114.56
July	8,769	701.52
August	8,609	688.72
September	31,059	2,484.72
October	10,311	824.88
November	32,217	2,577.36
December	45,815	3,665.20
January, 1937	100,775	8,062.00
February	156,052	12,484.16
March	179,480	14,358.40
April	160,152	12,812.16
May	172,365	13,789.20
June	143,615	11,489.20
July	146,724	11,739.92
Total	1,222,375	$97,790.00

TABLE 2

Potentials of Hall & Briscoe Wells, Oklahoma City Field

	POTENTIALS IN BARRELS PER DAY			
	First Potential	September, 1936	March, 1937	July, 1937
Francis	.....	9,975	3,793	3,034
Average offset	7,757	6,371	3,070	2,456
Marion	18,517	15,612	4,923	3,938
Average offset	12,952	10,194	4,060	3,248
Villa	10,888	9,693	3,734	2,988
Average offset	9,557	8,431	3,414	2,731

FIGURE 3

Hookup at Francis well, Oklahoma City, showing separator close to well with discharge pipe enlargement between well and separator.

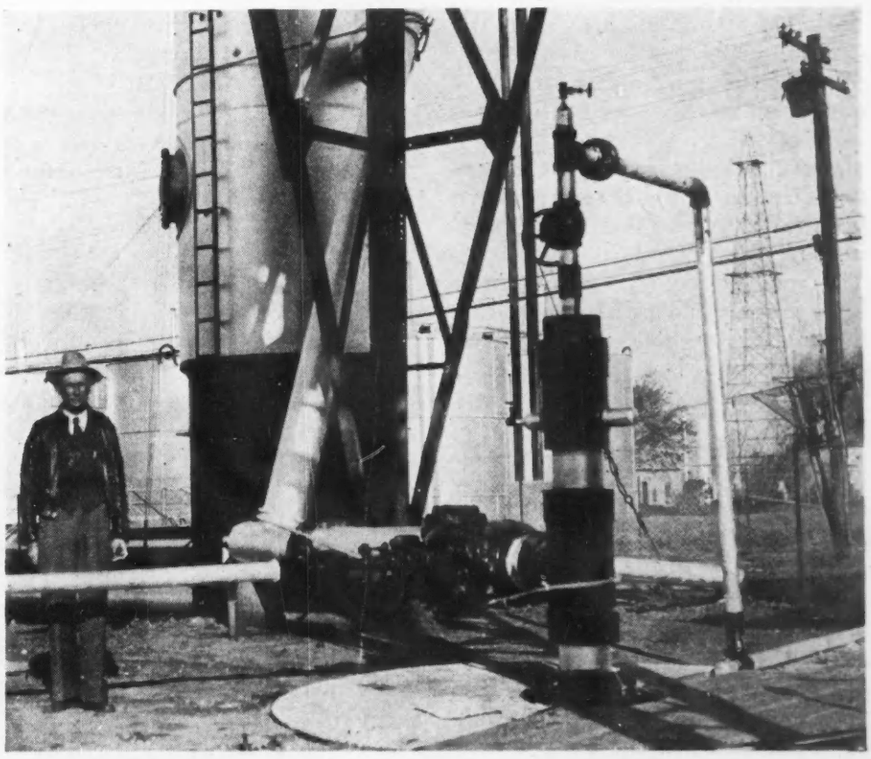


TABLE 3

Monthly Production of Hall & Briscoe Wells, Oklahoma City Field

MONTH	Francis	Marion	Villa	Average	Average of 12 Offsets
June, 1936	.....	.....	9,904	9,904	10,165
July	.....	15,170	9,033	12,051	8,525
August	.....	13,541	3,927	8,734	10,046
September	14,189	17,005	10,757	13,984	10,585
October	3,723	19,846	12,857	12,142	12,687
November	13,774	21,904	13,236	16,305	11,371
December	15,829	25,425	15,000	18,751	14,103
Average, 1936	11,879	18,815	10,673	13,825	11,090
January, 1937*	19,607	29,539	18,119	21,943	14,866
February	18,208	24,821	19,040	19,696	13,941
March	26,210	16,795	18,110	19,223	11,994
April	20,198	10,303	19,932	17,222	13,918
May	20,686	21,150	20,841	20,892	14,077
June	11,982	17,326	11,387	13,565	10,559
July	19,280	11,220	16,078	15,526	13,601
Average per month, 1937	18,820	18,914	17,151	18,295	13 279

* Pipe line runs reported on and after January, 1937.

the two wells on the down-dip side. The potential of the higher well structurally was established on natural flow. The successive potentials of these three wells are given in Table 2.

The first two sets of potentials were established by making actual tests. The potentials in March and July, 1937, were determined on a graduated decline. In the case of nearly all of the wells in the Capitol area, the potentials established on graduated decline in March, 1937, were much too high, since very few wells in this area actually made the allowable of 14 percent, during March on the basis of this potential.

The Marion well made 50,000,000 cubic feet of gas on the first potential. The potential was not the maximum possible to obtain inasmuch as this excessive quantity of gas set up an excessive friction loss in the casing, thereby holding a higher back pressure on the formation than would otherwise have been the case, and thereby restricting the flow of oil into the well. The remedy for such a condition is to employ a larger casing. Unfortunately casings cannot be changed to a larger size after a well has been completed.

Production

The hook-up at the well is shown in Fig. 3. The separator is placed close to the well, and the discharge pipe between the casing and the separator is larger than the casing, in order to reduce the back pressure at the well-head as low as possible. Three-inch tubing is run through a packer of a type that can be used when the electric centrifugal pump is employed.

Production of wells in the Capitol area has been dependent on the potentials established for at least the first six months of their life. Many wells have declined so rapidly that they have been producing on actual basis of 100 percent capacity, especially since graduated declines have been put into effect, thus extending the inequities brought about by wells that have suffered severe decline in production. The allowed percentage has varied from 3 to 18 percent of the potential since these three wells were drilled. Production of the three wells of the Hall & Briscoe operation is given in Table 3.

Based on a combined area of 12.55 acres contained in the drilling blocks of these three wells, the production has averaged 49,300 barrels per acre to the end of July, 1937.

There has been a gradual decline in potentials of these wells, although this is not clearly indicated by the monthly production, owing to changes in the allowable percentages. Tests are taken at frequent intervals to determine the formation and flowing pressures, the maximum production rate, the input and output gas factors, and the formation gas-oil ratios.

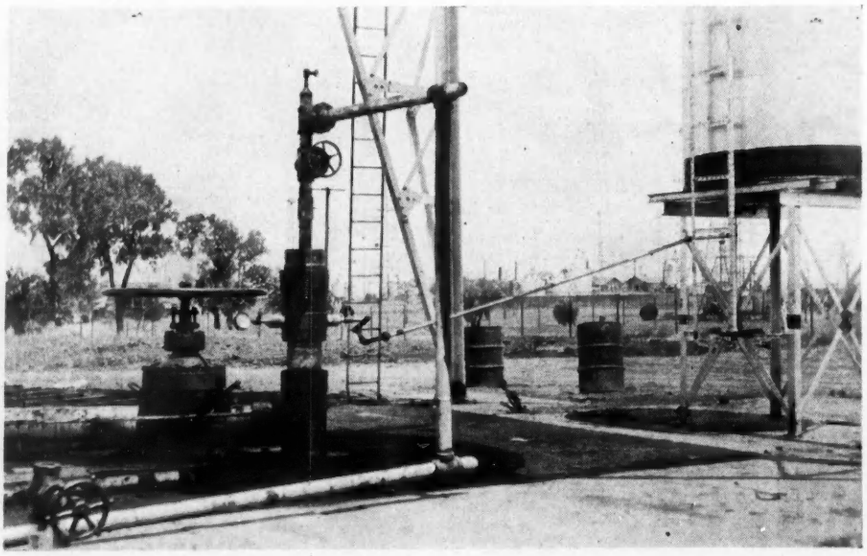
When the reservoir pressuree had declined to approximately 150 pounds, bottom-hole pressure, paraffin began to deposit on the walls of the casing and tubing, and it was necessary to start applications of solvent treatment in order to maintain the wells reasonably free from this deposition. Any relaxation in the treatments was immediately reflected in the reduced production of the well, and in an increase in the quantity of input gas per barrel required to lift the oil. Small storage tanks were set up at each well and a quantity of paraffin solvent was maintained in each tank as faithfully as possible, in order that the treatments might be applied regularly. Figure 4 is a view of the set up of the solvent tank and the pipe connections at each well.

The Marion well flowed naturally until February, 1937, when it ceased flowing, and it was necessary to employ artificial means of lifting the oil, therefore, gas-lift was applied.

The Francis and Villa wells have remained on straight gas-lift at all

FIGURE 4

Hook-up on the Villa well at Oklahoma City, showing the solvent treatment tank at right.



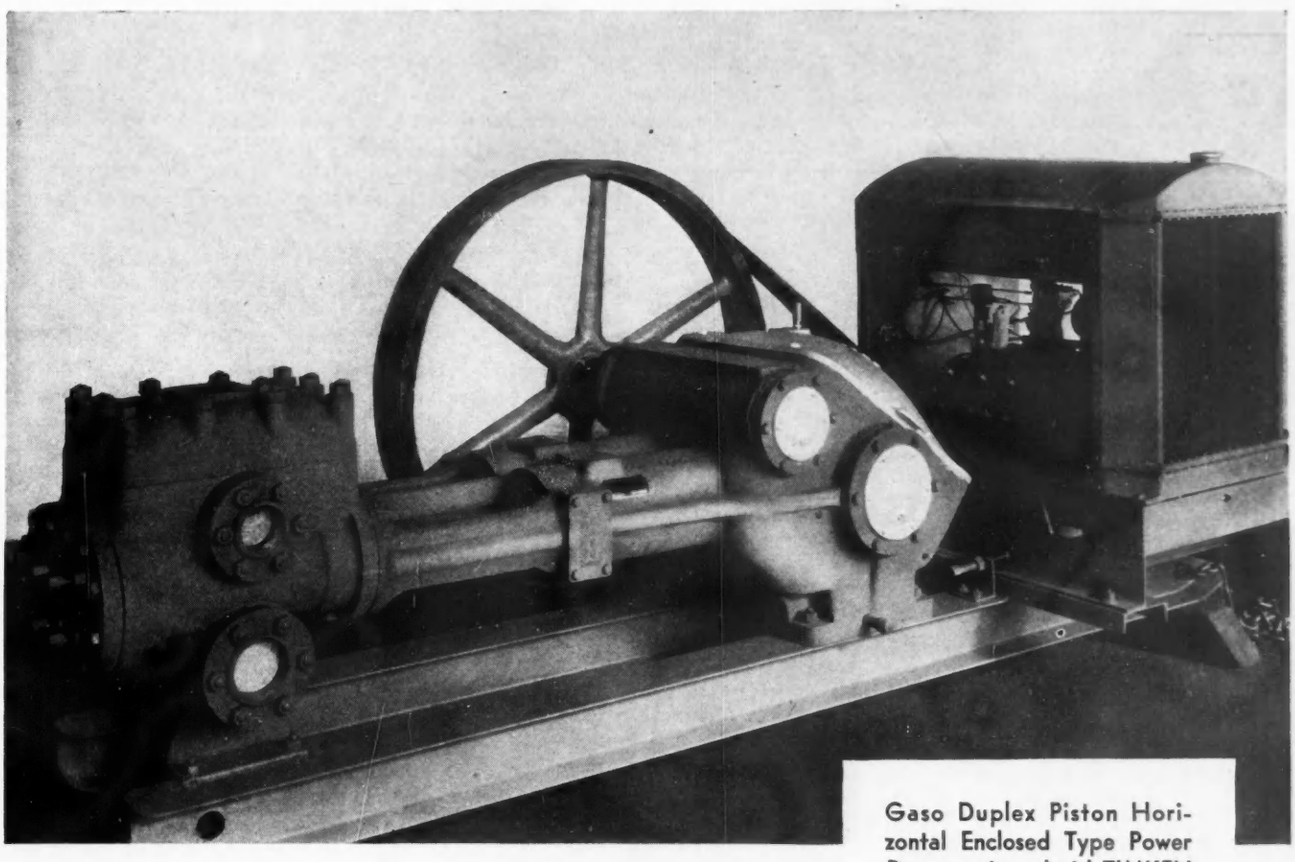


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TABLE 4

Gas-Factors in Hall & Briscoe Wells, Oklahoma City Field

MONTH	CUBIC FEET PER BARREL, ATMOSPHERIC PRESSURE BASE								
	FRANCIS			MARION			VILLA		
	Input	Output	Gas-Oil Ratio	Input	Output	Gas-Oil Ratio	Input	Output	Gas-Oil Ratio
June, 1936	.....	.....	.....	.....	.....	.....	1,169	.....	.....
July	.....	.....	.....	.....	.....	.....	587	.....	.....
August	.....	.....	.....	.....	.....	.....	565	.....	.....
September	1,340	.....	.....	.....	.....	.....	641	.....	.....
October	883	1,445	562	.....	.....	.....	638	1,410	772
November	1,305	1,690	385	.....	.....	.....	826	1,475	649
December	1,575	1,985	410	.....	.....	.....	985	2,056	1,071
January, 1937	1,865	2,430	565	190	.....	.....	1,265	2,790	1,525
February	2,630	3,320	690	2,730	4,930	2,200	1,840	3,340	1,500
March	3,570	4,180	610	3,730	7,180	3,450	1,515	3,090	1,575
April	5,330	5,780	450	3,710	5,580	1,870	2,500	4,280	1,780
May	5,450	5,720	270	5,080	6,100	1,020	2,190	3,990	1,965
June	7,000	.....	.....	.....	.....	.....	3,870	5,120	1,250
July	7,410	7,650	240	.....	.....	.....	4,390	6,000	1,610

times inasmuch as the allowable could be lifted by this means.

Since offset wells were completed with casing sizes ranging from 7-inch and 9⅝-inch, the majority being 8⅝-inch, it would not be expected that the offsets could establish as high a potential, nor make as great a production, as these three wells with casing of 9⅝ inches. There also arose difficultv at times for the offset wells in being unable to obtain gas at sufficient pressure to lift the production that the well could make. At present there are four offset wells on the beam, one is on a hydraulic pumping unit, three on straight submerged electric centrifugal pumps, three on combination gas lift and bottom-hole electric pumps, and one on straight gas-lift.

Reservoir Pressures

Reservoir pressures have gradually declined as noted in Figure 5. The Villa well was not on production from July 11, 1936, to August 23 of the same year. Yet, during this period the reservoir pressure declined from 405 pounds to 355 pounds, indicating the highly permeable character of the sand and the rapid transfer of fluid from one portion of the reservoir to another area of lower pressure. The actual capacity of this well on July 11, was 12,200 barrels, whereas it was only 9,800 barrels per day on August 23, after the pressure had declined from 405 pounds to 355 pounds.

Gas-Oil Ratios

Gas-oil ratios have varied greatly between different wells. The Marion well has usually made a greater quantity of formation gas than either of the down-dip wells. This was to be expected, since gas was escaping from oil down the dip, and moving up the structure, after the wells were shut in, having produced their allowables for the month, thus making for high gas-oil ratios in the higher portion of the reservoir. However, this action of gas moving to the higher part of the structure tended to maintain the upper wells on natural flow for a much longer period of time than would otherwise have been the case. Input and output factors, and gas-oil ratios, for these three wells are given in Table 4.

As production declines, the output factor per barrel gradually increases as noted in Table 4. General factors for this output ratio in the Oklahoma City field were given in article recently published.[1] Inasmuch as output factors must gradually increase as the flowing pressure declines, the input factor must also increase unless there is a corresponding increase in the formation gas-oil ratio, which, however, is usually not the case. As a rule, in the Oklahoma City field, the gas-oil ratio becomes reduced as the production declines, especially in down-dip wells.

Groups of tests taken at different periods to determine the best rate at which to operate these wells are given in Table 5.

Tests 1, 2, 7 and 8 in Table 5 are illustrative of the comparatively small quantities of input and output gas factors required per barrel when lifting large quantities of oil. Tests 3 to 6, 9 to 13, 14 to 16, illustrate the principle that

TABLE 5

Gas-Lift Tests on Hall & Briscoe Wells, Oklahoma City Field

Test No.	WELL	Barrels Oil per Day	INPUT GAS		OUTPUT GAS		FORMATION GAS	
			Total	Per Barrel	Total	Per Barrel	Total	Per Barrel
1	Villa	11,250	5,500,000	490	20,500,000	1,820	14,950,000	1,330
2	Villa	9,486	5,580,000	588	15,940,000	1,685	10,360,000	1,097
3	Villa	2,628	3,670,000	1,620	6,500,000	2,870	2,830,000	1,250
4	Villa	2,358	3,555,000	1,510	6,040,000	2,570	2,495,000	1,060
5	Villa	1,613	685,000	424	4,220,000	2,620	3,535,000	2,196
6	Villa	1,169	Natural Flow		2,780,000	2,370	2,780,000	2,370
7	Francis	6,792	5,700,000	840	9,683,000	1,425	3,983,000	585
8	Francis	6,912	5,410,000	782	8,526,000	1,234	3,116,000	452
9	Francis	4,152	5,910,000	1,400	7,250,000	1,745	1,340,000	345
10	Francis	3,480	5,465,000	1,570	6,240,000	1,790	775,000	220
11	Francis	3,912	4,830,000	1,235	6,220,000	1,590	1,390,000	355
12	Francis	3,384	4,075,000	1,210	5,580,000	1,645	1,505,000	435
13	Francis	3,288	4,040,000	1,230	5,300,000	1,610	1,260,000	380
14	Francis	686	4,286,000	6,247	4,485,000	6,538	195,000	291
15	Francis	705	3,712,000	5,255	4,086,000	5,795	374,000	540
16	Francis	645	3,295,000	5,108	3,594,000	5,572	299,000	464

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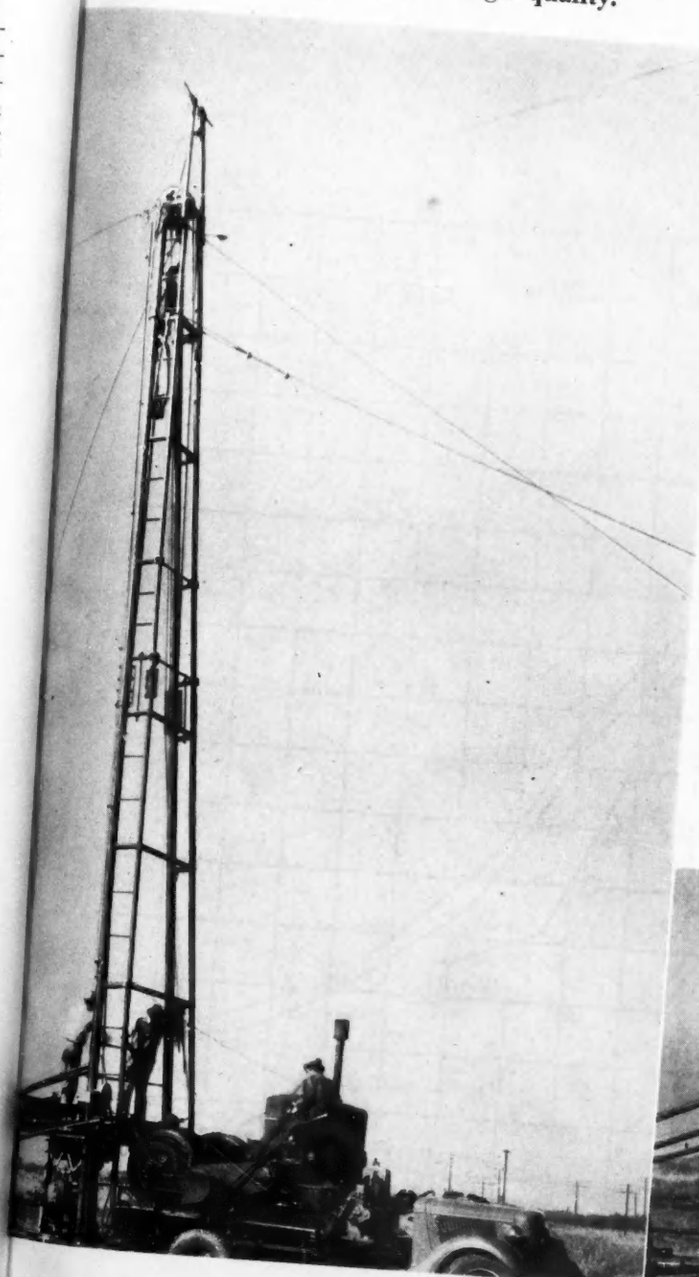

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TABLE 6

Back-Pressure Tests on Hall & Briscoe Wells, Oklahoma City Field

Test No.	WELL	Pounds Back Pressure	Barrels Oil per Day	INPUT GAS		OUTPUT GAS		FORMATION GAS	
				Total	Per Barrel	Total	Per Barrel	Total	Per Barrel
17	Francis	3½	3,727	4,368,000	1,172	6,061,000	1,626	1,693,000	454
18	Francis	9½	3,354	4,330,000	1,298	5,721,000	1,706	1,391,000	408
19	Francis	15½	3,018	4,330,000	1,401	5,784,000	1,920	1,454,000	519
20	Francis	18½	2,900	4,300,000	1,480	5,213,000	1,800	913,000	320
21	Francis	2¾	558	3,030,000	5,410	3,440,000	6,170	410,000	760
22	Francis	4¾	490	2,910,000	5,930	3,390,000	6,920	480,000	990
23	Francis	11½	410	3,000,000	7,330	3,340,000	8,130	340,000	800
24	Francis	15½	274	3,000,000	10,950	3,330,000	12,200	330,000	1,250
25	Francis	19	177	3,000,000	17,000	3,260,000	18,400	260,000	1,400

when excessive quantities of input gas are admitted to the well, the maximum production will not be obtained, and that a reduction in the quantity of gas then brings about a larger production of oil, and results in smaller input and output gas factors. Reduction of input gas in test 5 reached the point where the production was reduced to a point that was below that of maximum efficiency, and the gas factors started to increase. In test 6, the input gas was closed off altogether, and the well continued to flow naturally. But, the rate of production of oil was reduced, the output factor was increased, and, consequently, the gas-oil ratio was considerably increased over that obtaining when the maximum rate of production was reached in test 4.

Two sets of back pressure tests are given in Table 6. The input gas was maintained at a constant rate, so far as possible to hold it, and the back pressure on the well was gradually increased. In one set of back pressure tests, 17 to 20, it is seen that as the back pressure was increased, the production was reduced, and as production became reduced, the input and output factors were usually increased. A similar set of tests, from 21 to 25, when the capacity of the well was at a much lower rate, bears out the same point. In this case, the gas-oil ratio seemed to increase as the back pressure was increased, although this cannot be said to be a positive determination, since even slight errors in the measurements of either the input or output gas would become greatly accentuated in the gas-oil ratios, inasmuch as gas-oil ratios are obtained by taking the difference between the input and the output gas, rather than being observed directly.

These three wells have again brought out the advantages of employing a large casing in a deep well, where there is a very permeable and thick sand body, and where a large quantity of oil will flow into a well with a comparatively small differential between the reservoir pressure and the flowing pressure. Early in the life of the Wilcox sand wells in the Oklahoma City field, attention was called to the fact that greater potentials were being established through large casing strings[2], and at a later date a summary was made of the production from wells with different sizes of casing[3] in which there was seen to be a pronounced advantage in favor of the largest sizes of casing employed in this field.

[1] S. F. Shaw. Advancement in Gas-Lift Operations. Oil Weekly, June, 1937, p. 19.

[2] R. W. Brauchli. Size of Oil Strings and Initial Output. Oil & Gas Journal, September 3, 1931.

[3] S. F. Shaw. Influence of Casing Sizes on the Production of Oil. Oil Weekly, November 12, 1934, p. 35.

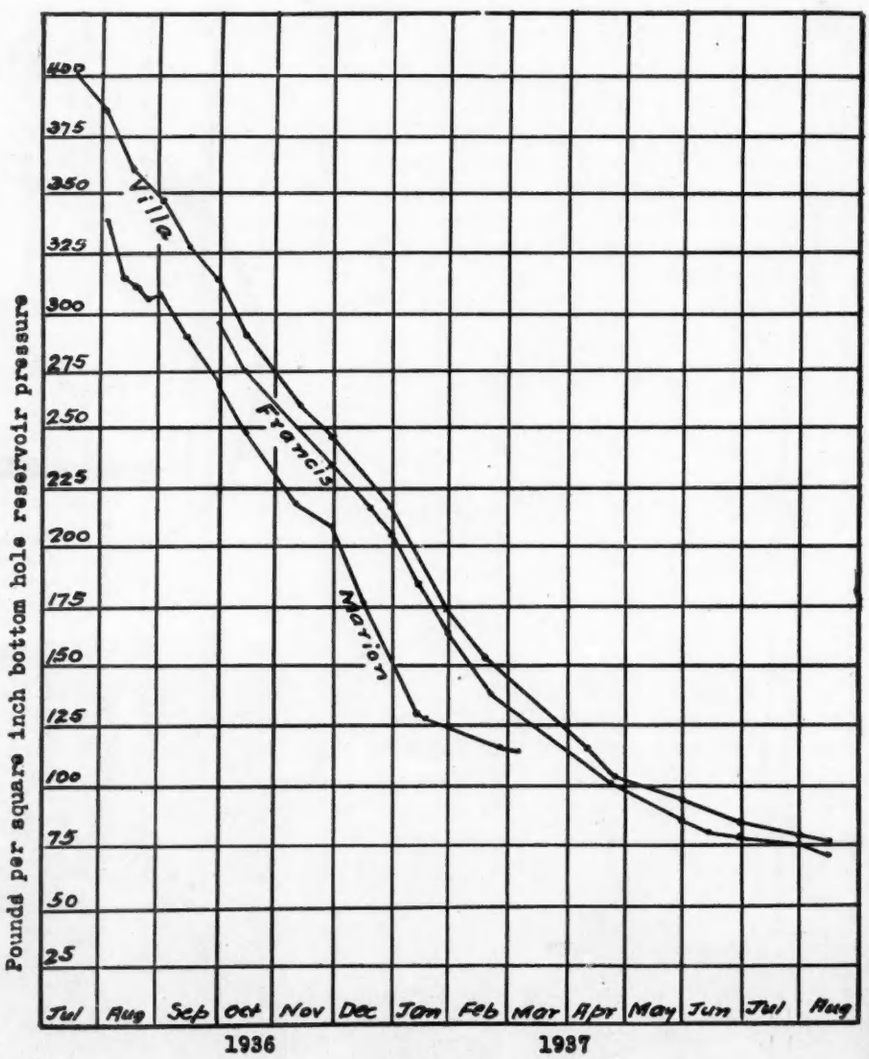

FIGURE 5

Reservoir pressure, Hall & Briscoe wells, Oklahoma City.

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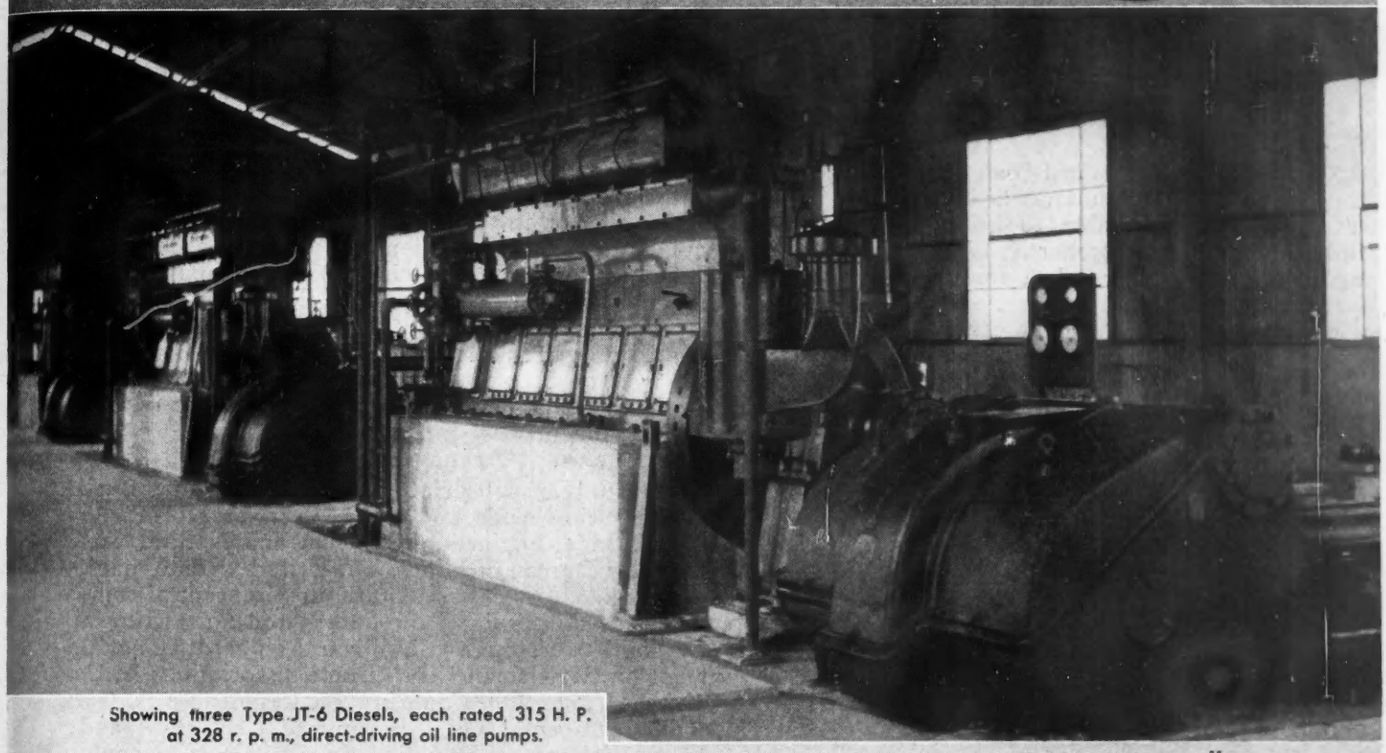

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Oil Well Behavior Study

BASED UPON SUBSURFACE PRESSURE AND PRODUCTION DATA*

By H. C. MILLER, Senior Petroleum Engineer, San Francisco
E. S. BURNETT, Senior Mechanical Engineer, Amarillo
R. V. HIGGINS, Assistant Petroleum Chemist, San Francisco, United States Bureau of Mines

INFORMATION obtained from subsurface pressure and temperature measurements in oil wells now is recognized as invaluable to geologists, engineers, and operators of oil properties. Available only during the past few years, data resulting from subsurface pressure surveys in oil wells already have found widespread application in the estimation of reserves and in the planning of comprehensive oil-field development programs. Subsurface pressure and temperature data, together with measurements of volumes and specific gravities of the fluids produced by individual wells, also are included in essential and fundamental information in studying the movement of oil, gas, and water through reservoir sands to wells. Heretofore, laboratory findings were relied upon almost entirely for information pertaining to the mechanics of flow of fluids through porous media, because until subsurface pressure and temperature instruments were developed, there was no way to check laboratory results with actual performance in underground formations. Laboratory and field experiments now lend themselves to closer correlation —a fact that will accelerate the interpretation of many phenomena that occur when oil and gas flow through reservoir rocks, thousands of feet below the surface of the earth.

This paper summarizes the results obtained thus far in a Bureau of Mines study of certain data pertaining to subsurface pressures and production of wells producing oil and gas (and water). For wells that have been studied, flowing naturally under volumetric or hydraulic control, a simple relation has been found between the mass rate of fluid (oil, gas, and water) production and the corresponding drop in pressure in the reservoir sand. The equated relation embodies a productivity factor or "index" expressed in terms of mass rate of fluid production per pound drop in pressure through the sands. The equation is an expression of the ability of a well to produce, which permits comparison on a uniform basis of the productivities of different wells producing from the same natural reservoir. The study shows also that over the range of observed data a productivity factor based on mass rate of production is a constant for a given well for different rates of flow. In other words, the mass rate of production is a straight-line function of the drop in pressure through the reservoir sand.

Substitution in the equation of actual pressure determinations and corresponding production data obtained while a well is flowing permits computing the average static pressure opposite the producing sand in a well. Thus, if two (but preferably three or more) sets of pressure-flow data are obtained from a well, the average pressure that would exist opposite the productive sand or zone, if the well were shut in, can be determined.

*Published by permission of the Director, U. S. Bureau of Mines.

Acknowledgments

The study of subsurface pressure and temperature data is being made under the supervision of R. A. Cattell, chief engineer, Petroleum and Natural Gas Division, Bureau of Mines. The writers wish to thank R. E. Allen, former assistant oil umpire, central committee of California oil producers and now with A. O. Smith Corporation; William Reinhardt, general manager, Kettleman North Dome Association; A. C. Rubel, Union Oil Company of California; A. H. Bell, Continental Oil Company of California; and E. A. Wahlstrom, Stanolind Oil and Gas Company, for furnishing the well data upon which this study is based. Thanks are due also to the following engineers for their constructive criticism of the manuscript; H. N. Marsh and B. H. Robinson, General Petroleum Corporation of California; A. H. Bell, Continental Oil Company of California; H. C. Pyle, Union Oil Company of California, all having headquarters in Los Angeles, California; to R. C. Patterson, U. S. Geological Survey, Taft, California; and to the following members of the Bureau of Mines, R. A. Cattell, H. C. Fowler, C. W. Seibel, Gustav Wade, C. B. Carpenter, and G. B. Shea.

Source of Data

In May and June, 1935, subsurface pressure and temperature traverses were run by representatives of the oil umpire for the Central Committee of California Oil Producers in a large number of wells in the Kettleman North Dome oil field, California. Through the courtesy of R. E. Allen, then assistant oil umpire, and the officials of several of the companies on whose wells the tests were made, reservoir and production data resulting from this pressure-

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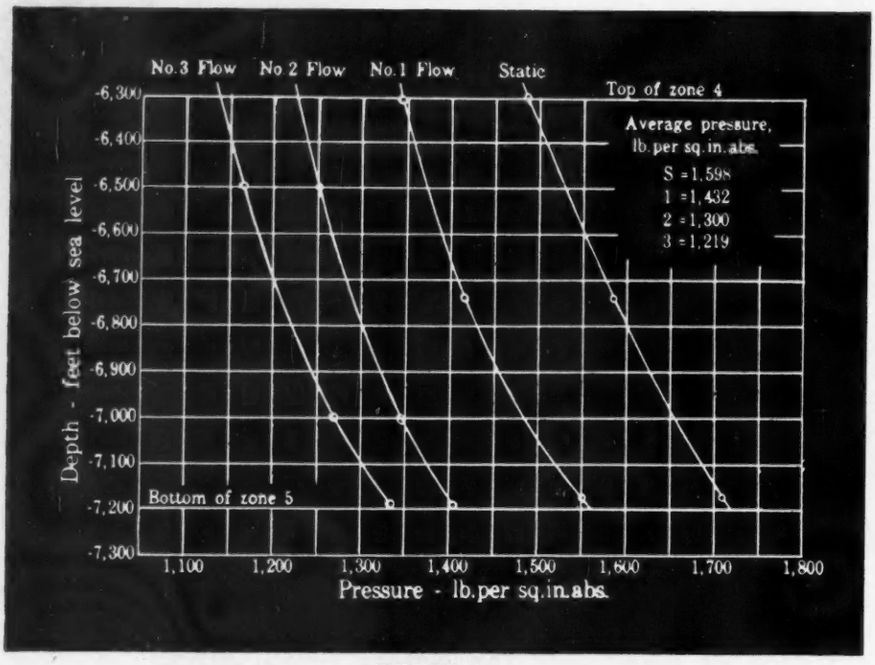

FIGURE 1

Depth-pressure curves for static conditions and three rates of flow in well in Kettleman Hills.

temperature survey were made available to the Bureau of Mines for use in its study of flow of oil, gas, and water through reservoir sands. Later, certain data acquired during subsequent surveys on Kettleman North Dome Association holdings were made available to the writers. Data of a similar type to those on Kettleman Hills wells were collected also on wells in the Dominguez, Playa del Rey, and Padre Canyon fields, California; Hobbs field, New Mexico; Rodessa field, Louisiana; and the East Texas field, Texas.

In the course of the study reported in this paper, data were collected from more than 150 wells. The observations on many of the wells, however, were found to be incomplete or unsuitable for the purpose of investigating the flow of fluids through reservoir sands because some essential information was lacking or obviously in error. For example, the data collected from wells reported to have been surging or heading badly during flow tests were eliminated from consideration because it was found that pressure and volume observations were affected uncertainly by unsteady flow. Test data from wells tubed below the top of the producing sands also were set aside temporarily to eliminate from consideration pressure determinations that might be inaccurate because of restriction of the flow channel by the pressure instrument. This report, therefore, is based on the study of pressures, production, and related data from 45 wells.

An Equation for Flow of Fluids Through Reservoir Sands to Wells

The collected data concerning depths and pressures opposite the producing sands were plotted on depth-pressure charts, as shown in Figure 1. The best curve was drawn through each set of plotted points representing the pressure traverse for one condition of flow (zero flow for the traverse made while the well was shut in). The average pressures between the top and bottom of the producing sands were determined from the depth-pressure curves by means of a planimeter.

The drops in pressure between the average formation (static) pressure and the different average flowing pressures then were determined, and the differential pressures were plotted on logarithmic paper against the corresponding mass rates of fluid (oil, gas and water) production per 24 hours. In a large number of wells a definite relation between the pressure drop in the producing sands and the combined or total mass rate of (fluid) production was found to exist. This relation, as represented graph-

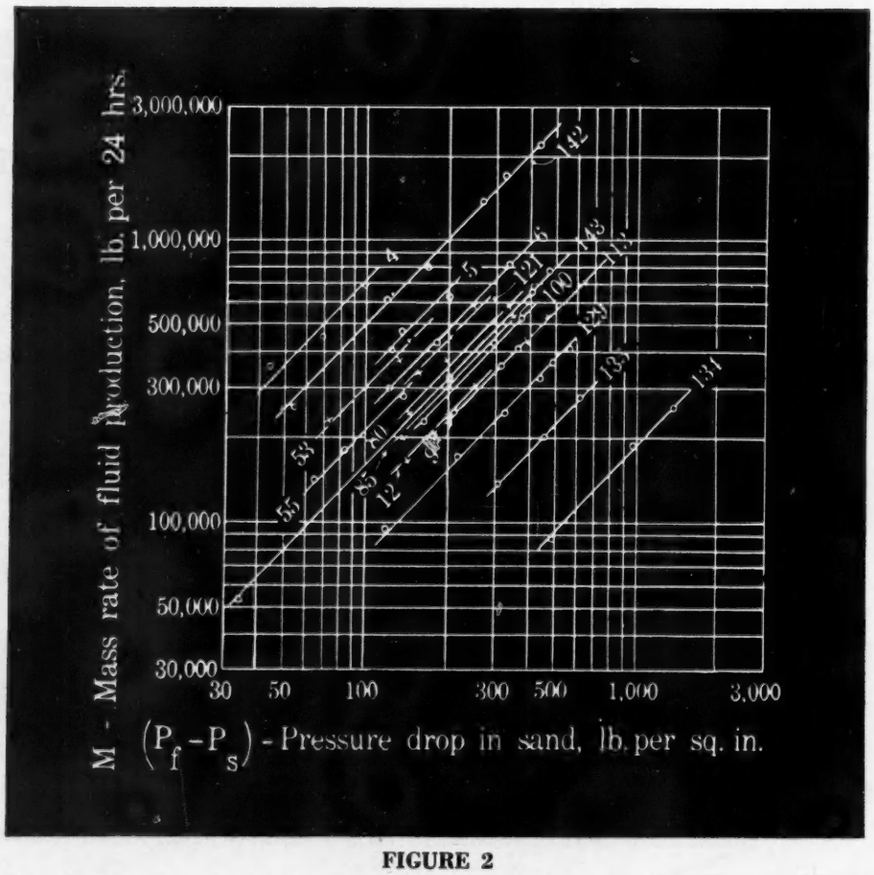

FIGURE 2

Results of tests on 17 oil wells showing straight-line relation between M and $(P_f - P_s).129$, well in Dominguez; 134 and 135, wells in Playa del Rey; 142, well in Rodessa; 143, well in East Texas field; all others, wells in the Kettleman Hills.

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Figure 2 shows the graphs on logarithmic paper for 17 wells where the mass rate of production per 24 hours is plotted against the drop in pressure through the sands for different rates of flow.. This relation was found to hold for many other flowing wells in several oil-producing districts of the United States, but for clarity their graphs are not shown on this chart. The relation between the mass rate of fluid production and the pressure drop in the sand, shown graphically in Figure 2, can be expressed mathematically by the linear equation:

$$\text{Log } M = \text{Log } C + \text{Log } (P_f - P_s),$$

or in arithmetic coordinates by:

$$M = C\ (P_f - P_s),$$

where M = mass rate of fluid production, pounds per 24 hours.

Also, $M = Q_o w_o + Q_g w_g + Q_w w_w$, where Q_o, Q_g and Q_w are the respective volume rates of production of oil, gas and water in cubic feet per 24 hours at 60° F. and atmospheric pressure, and w_o, w_g and w_w are the corresponding densities in pounds per cubic foot.

P_f = average "shut-in" formation pressure in the well opposite the productive sands, pounds per square inch absolute.

P_s = average back pressure (flowing pressure) opposite the productive sands in the well, pounds per square inch absolute,

$P_f - P_s$ = pressure drop producing flow through the sands, pounds per square inch,

C = coefficient, numerically equal to the mass rate of flow of fluids per pound pressure drop through the sand; in other words, a productivity factor or "index." C has the same numerical value as M when $P_f - P_s = 1$; or since the slope of the lines on Figure 2 is 1 to 1, C is 1/100 of M, read at $P_f - P_s = 100$.

Ordinary arithmetic plotting of the values plotted in Figure 2 would yield straight lines through the origin ($M = O$, $P_f - P_s = O$). The slopes of these straight lines (C) are the mass rates of production per pound pressure drop through the sand, or the productivity "indices."

It should be emphasized that the straight-line relation between the drop in pressure and the mass rate of flow of heterogeneous fluids through reservoir sands presented in this paper is merely an empirical statement of the facts found on plotting the data pertaining to the wells in several fields that have been studied. The relation may not be supported completely on a rational basis; it has rational support only for an incompressible fluid and viscous flow—conditions that probably were approached in the flow of undersaturated oil through reservoir sands in the East Texas field studied by Reistle and Hayes[1]. However, certain factors in the flow of compressible fluids through reservoir sands may have compensating influences that make the relation hold in a large number of wells. Perhaps, after additional data have been collected and analyzed more rigorously than has been possible in the preparation of this paper, some modification of the equation may be necessary. However, until instruments are built that will record subsurface pressures more accurately than is possible with those now in general use, it is believed that the relation as expressed can be considered a close approximation for flow of mixtures of oil and gas through many reservoir sands and that application of the empirically developed equation will be helpful in studying performance of wells and reservoirs.

[1]Reistle, Jr., C. E., and Hayes, E. P., A study of subsurface pressures and temperatures in flowing wells in the East Texas field and the application of these data to reservoir and vertical-flow problems; Bureau of Mines, Report of Investigations 3211, May, 1933, 30 pp.

C, in the equation, $M = C\ (P_f - P_s)$, numerically is equal to the mass rate of flow of all fluids entering the well per pound drop in pressure through the reservoir sand. As such, C is a measure of the ability of a sand to produce and therefore a productivity factor or "index." It is well known that oil sands generally are not uniformly permeable from top to bottom or even laterally over the area of the reservoir. For that reason, C cannot be considered an absolute measure of permeability. Many producing zones, especially in California, comprise a series of oil sands, sandy shales that may bear oil, and nonproductive shales. Furthermore, the shale strata interbedded between layers of productive sand range in thickness from a fraction of an inch to many feet and may or may not be continuous throughout the area of the reservoir. Obviously in a system as complex as an oil reservoir, the characteristics of each sand layer or the effect on average permeability of shale lenses in the sands cannot be evaluated accurately.

As many oil sands consist of alternate layers of productive sand and nonproductive shales, it seems reasonable to conclude that any measure of permeability that would be helpful in comparing the productivity of wells drilled in productive zones of that type should consider only those strata in the sand section that are oil and gas bearing. To be able to make such comparisons, however, would require accurate knowledge of the cumulative thickness of the productive strata exposed to the well. Unfortunately, the thickness of shale breaks in oil zones is not always measured and recorded on the drillers' log sheets, and electrical logging of oil zones has not yet become a part of the drilling procedure in all wells. Furthermore, in California, oil strings generally are perforated from the top to the bottom of the productive zones; blank pipe is set between the zones, and no attempt usually is made to "blank off" nonproductive strata within oil zones. Therefore the number of feet of perforated pipe in a well is not necessarily a measure of the net thickness of the productive sand exposed to the well. The only information available to the writers on wells included in their study is the number of feet of perforated pipe in the wells; in others words, the combined thickness of the several oil zones exposed in the wells. Accordingly, for comparative purposes, all calculations of the productivity of wells were made on the basis of their "specific productivity," C′—pounds of fluids produced by the wells per 24 hours per foot of oil zone exposed in the well per pound difference between the average formation (static or shut-in) and flowing pressures. Such a comparison is based on the assumption that the entire thickness of each producing zone is uniformly productive, which, of course, is not true. However, until more detailed information on net thicknesses of producing zones is available, comparisons between wells on the basis of their specific productivities are believed to be more significant than those based on average productivities.

Constancy of Well Productivity With Time

Although insufficient field data have been collected to permit making any conclusive statements as to the constancy of, or variation in, the productivity of wells with time and with changes in production practices, a number of interesting inductions can be made. The following statements and those

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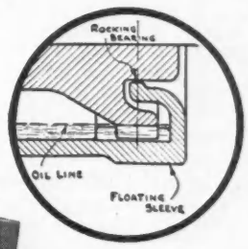

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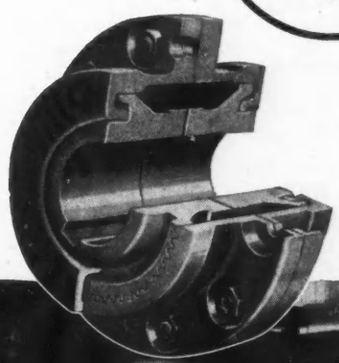

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(*Below*) Pumps and Gears—Phillips Petroleum Independence Pipe Line Station, Oklahoma City, Okla.

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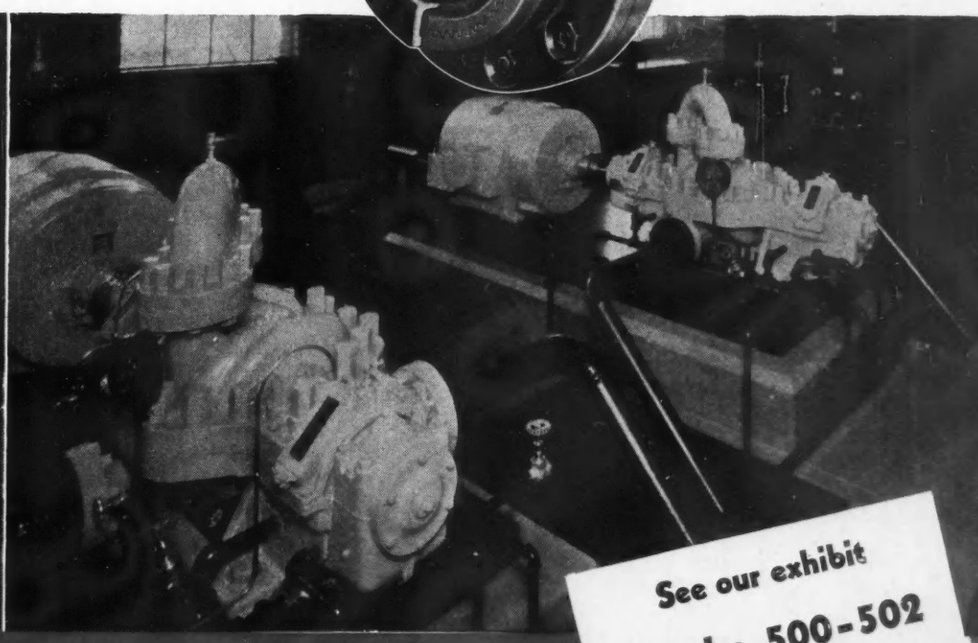

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TABLE 1

Changes in well productivity with time.
(9 wells in the Kettleman Hills, California, field)

Well Example No.	Months During Which Tests Were Made	Productivity Factor, C, Lb. of Fluid per 24 Hours per Lb. Pressure Drop in Sand	Perforations Exposed to Sands in Well, Feet	Specific Productivity Factor, C′, Lb. of Fluid per 24 Hours per Lb. Pressure Drop in Sand per Ft. of Sand
9	May, 1935.....	1,130	441	2.6
	Dec., 1935.....	1,000	441	2.3
	Feb., 1936.....	1,065	441	2.4
12	May, 1935.....	1,185	450	2.6
	Dec., 1935.....	1,100	450	2.4
	Feb., 1936.....	1,335	450	3.0
13	May, 1935.....	5,810	874	6.6
	Jan., 1936.....	3,110	874	3.6
	Feb., 1936.....	2,435	874	2.8
	Mar., 1936.....	3,470	874	4.0
31	May, 1935.....	4,530	1,089	4.2
	Jan., 1936.....	5,080	1,089	4.7
	Feb., 1936.....	6,430	1,089	5.9
39	May, 1935.....	2,970	900	3.3
	Feb., 1936.....	1,685	900	1.9
	April, 1936.....	2,340	900	2.6
58	June, 1935.....	2,865	895	3.2
	Feb., 1936.....	4,240	895	4.7
	April, 1936.....	3,730	895	4.2
59	May, 1935.....	2,340	869	2.7
	Jan., 1936.....	2,060	869	2.4
85	May, 1935.....	1,625	880	1.8
	Jan., 1936.....	1,625	880	1.8
96	May, 1935.....	1,050	988	1.1
	Jan., 1936.....	1,295	988	1.3
	Mar., 1936.....	1,360	988	1.4

appearing in the next section on the productivity of offset wells, therefore, are observations rather than definite conclusions.

Table 1 shows values of C (productivity factor) and C′ (specific productivity factor) at different periods in the life of 9 wells in the Kettleman Hills field. The small differences in the values for C and for C′ in wells No. 9, 12, 59, 85 and 96, and the fact that in most of the wells the productivity did not increase (or decrease) uniformly with time but changed irregularly, suggest that in some wells the productivity factor is relatively constant over periods as long as 8 or 9 months.

Changes in well productivity may result from a number of different causes. Decreasing productivity signifies that the mass flowing through the sands to the well per pound drop in pressure is decreasing with time and indicates possible clogging of the sand face by sand, silt, waxy substances, or other materials, or drainage interference by other wells. On the other hand, if the productivity factor of a well increases with time it may be evidence that the well is "cleaning itself out" and that the resistance to flow at the sand face is decreasing. If the well produces sand along with the oil and gas the increase in productivity per pound drop in pressure through the sand may indicate that channels have been created in the reservoir or that the effective radius of the well bore is increasing.

The relatively small increase (or decrease) in the productivity factor during an 8-month period indicates that the change in the ability of a sand to produce fluids per pound pressure drop must be gradual and of small magnitude during periods of a month or two. Therefore, if the productivity factor of a well remains constant, or nearly so, for one or a few months, after the factor for a well is once established it may be used conveniently during the period for which it remains relatively constant to regulate production practices in accordance with desired rates of production or pressure drop through the sand.

Comparison of the Productivity of Offset Wells Producing From the Same Zones

The data studied in connection with this report contained field tests on a number of sets of adjoining wells producing from the same zones in the Kettleman Hills field. Wells 9 and 12 (Table 1) were approximately 1,800 feet apart; their specific productivity factors in May, 1935, were identical, varied by 0.1 (4 percent) in December, 1935, and differed by 0.6 (25 percent) in February, 1936. Well 58 (Table 10) was 1,300 feet from well 59, yet in the summer of 1935, their specific productivity factors differed by 0.5, or 18½ percent. Two other offset wells, 1,585 feet apart in the northern end of the north dome of Kettleman Hills and producing from the same zones, had specific productivity factors in May, 1935, of 2.6 and 2.4; another pair of wells spaced 1,425 feet apart had specific productivities of 4.6 and 4.2, indicating a certain degree of uniformity of permeability of the sands about each of these two pairs of wells. Six wells in an area ¼ mile wide and 1¼ miles long had specific productivity factors of 3.2, 3.8, 3.2, 4.2, 4.6 and 4.2, respectively, a fair agreement considering the large area over which the wells were spaced.

That the specific productivities of all pairs of wells are not necessarily in close agreement is shown by the fact that in two wells, 2,000 feet apart, the productive factor for one was 11.8 and for the other 8.5. Such high specific productivity factors indicate relatively open or permeable sands, and it is to be expected that considerable differences in productivity will exist in such sands.

Determining Average Formation Pressures From Flow Data

To determine the average formation (shut-in) pressure in a well, engineers have found it necessary to shut in the well for 24 hours or longer to allow pressures in the well opposite the sand face and in the formation about the well to equalize before lowering a pressure instrument and making a pressure traverse. At best one or more day's production is lost on the flowing schedule while waiting for pressures to equalize, and frequently wells fail to "come back" and produce oil at their former rate after having been shut in for even so short a period as 24 hours. An example may be cited also where an operator greatly desired to know the pressure opposite the productive sand in a well but feared to close the surface valves to permit equalization of well and reservoir pressures because of the high pressure that would have developed in the well if it were closed in. For these and perhaps other reasons, many operators are anxious to find some method whereby static pressures in wells can be determined without closing the wells.

If the pressure drop in the sand is proportional to the mass rate of production, in accordance with the relation $M = C\ (P_f - P_s)$, conforming to the indicated graphical study previously discussed, it is possible to estimate P_f, the most probable average formation (shut-in) pressure—corresponding to zero production—and $\frac{M}{P_f - P_s}$ or C, the most probable average mass rate of production of a well per pound drop

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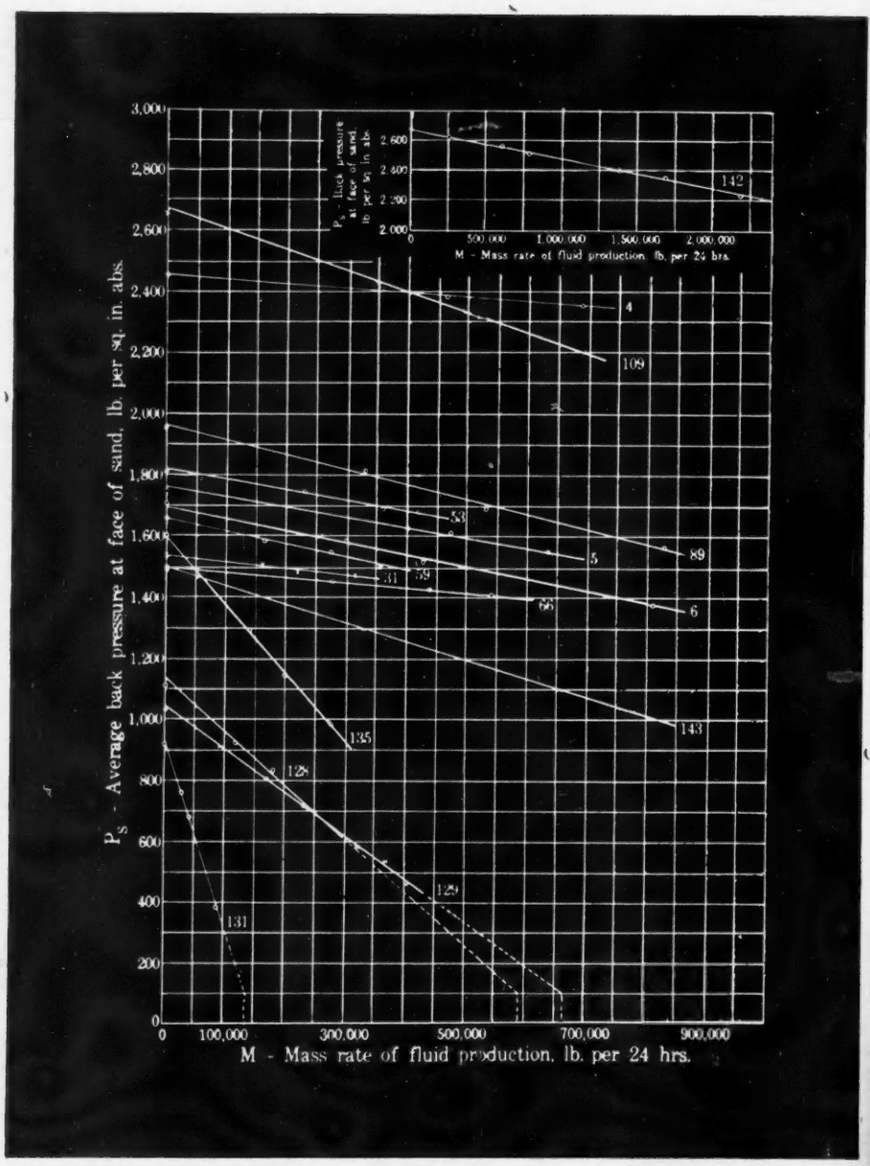
FIGURE 3

Results of tests on 15 oil wells showing straight-line relation between P_s and M. 128, 129 and 131, wells in Dominguez; 135, well in Playa del Rey; 142, well in Rodessa; 143, well in East Texas field; all others, wells in Kettleman Hills.



in pressure through the sand, from flowing data alone. Furthermore, if subsequent studies show that the relation between pressure drop and mass rate of fluid production holds for flow conditions beyond the range of experimental data studied so far, it will be possible to estimate the maximum fluid production rate (well potential) at any limiting pressure at the sand face within the capacity of production equipment without making open-flow tests.

When no measurements of the static or shut-in pressure opposite the productive sands have been made and two or more sets of pressure and production data have been obtained from a well, a close estimate of the average static pressure across the sand face exposed in the well can be made by plotting on rectangular coordinate paper average pressures at the sand face while the well is flowing against the corresponding mass rates of flow. The best straight line through the plotted points extended to the ordinate representing zero flow gives the average static pressure. Extending the best straight line in the opposite direction to any limiting sand-face pressure shows the maximum fluid production rate of the well at that pressure.

Average pressures at the sand face are plotted against the mass rates of flow for 15 wells in Figure 3. Best straight lines are drawn through the plotted points and extended to the left to intersect the ordinate representing zero flow where the average static pressure across the sand face in the well may be read. For three of the wells, the best lines through the plotted points have been extended (by dashed lines) to the abscissa representing a limiting pressure of 100 pounds per square inch absolute. This was done to estimate the potential production rate of the wells, in pounds of fluid per 24 hours, at that limiting average back pressure against the producing sands.

Static pressure surveys had been made in each of the 15 wells represented in Figure 3. However, the static pressure reading was disregarded when the position of the best straight line through the points representing flowing data was determined. The difference in average static pressure between that determined from actual measurements and that determined by the best straight line through the points representing flowing data may be noted by the disparity between the plotted static pressure reading and the point of intersection of the best straight line with the zero ordinate. For some of the wells, the difference is so small that it can not be shown on the scale used in drawing Figure 3.

The slopes of the lines referred to the P_s axis are, in numerical values, directly proportional to the productivity indices of the wells. The fact that the slopes of the lines representing different wells are not the same indicates that the average productivities of the wells differ.

Table 2 shows the average formation (static) pressure actually measured in 19 wells in several different fields and the average formation pressure calculated by the method of least squares[2] from data taken while the wells were flowing. The table also shows

[2]For an excellent discussion of the method of least squares see "Higher Mathematics for Students of Chemistry and Physics" by J. W. Mellor, published by Longmans, Green & Company, New York, 1931.

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TABLE 2

Gas-oil ratios, and measured and computed values of the average formation (static) pressure in 19 oil wells in several different fields.

Well Example No.	Variation in Gas-Oil Ratios Cu. Ft. per Bbl.	PRESSURES (Lbs. per Sq. In. Abs.)		DIFFERENCES (Calculated Minus Measured)	
		Measured	Calculated	Lbs. per Sq. In.	Percent
Kettleman Hills, California:					
4	561— 883	2450	2456	+ 6	+0.2
5	938— 1,010	1747	1767	+17	+1.0
6	1,348— 1,414	1705	1695	—10	—0.6
9	522— 697	1815	1813	— 2	—0.1
17	640— 685	1714	1718	+ 4	+0.2
31	751— 852	1537	1532	— 5	—0.3
53	807— 1,185	1818	1822	+ 4	+0.2
59	636— 813	1655	1653	— 2	—0.1
66	1,025— 1,135	1479	1500	+21	+1.4
76	656— 768	1548	1562	+14	+0.9
89	2,820— 3,010	1960	1964	+ 4	+0.2
100	2,348— 3,820	1598	1600	+ 2	+0.1
109	13,490—15,790	2657	2678	+21	+0.8
Dominguez, California:					
128	1,138— 1,312	1111	1133	+22	+2.0
129	940— 1,350	1030	1048	+18	+1.7
Playa del Rey, California:					
134	27,600—41,700	1618	1596	—22	—1.4
135	4,300— 4,765	1604	1598	— 6	—0.4
Rodessa, Louisiana:					
142	3,024— 5,973	2670	2664	— 6	—0.2
East Texas, Texas:					
143	300	1500	1496	— 4	—0.3

the difference, in pounds per square inch, between the computed and measured formation pressures and these differences expressed as a percentage of the measured pressure.

Summary

The study of the observed data on subsurface pressures opposite the productive sands and related production data on wells in the Kettleman Hills, Dominguez, Playa del Rey, and Padre Canyon fields, California; Hobbs field, New Mexico; Rodessa field, Louisiana; and East Texas field, Texas, shows a simple definite relation between the mass rate of fluid (oil, gas and water) production and the drop in pressure causing flow through the sands. When the mass rates of production for different rates of flow in a well are plotted on logarithmic paper against the difference between the average formation (static or shut-in) and flowing pressures opposite the producing sands, the relationship between them is represented by a straight line, which may be expressed mathematically by the equation:

$$M = C (P_f - P_s),$$

where M = mass rate of fluid (oil, gas, and water) production, lb. per 24 hours,
C = coefficient, numerically equal to the mass rate of flow of fluids per pound pressure drop through the sands,
P_f = average "shut-in" formation pressure opposite the producing sands, lb. per sq. in. abs.,
P_s = average back pressure (flowing pressure) in the well opposite the producing sands, lb. per sq. in. abs.

Substitution of observed well data for the terms M, P_f and P_s in the equation permits calculating values for C, the productivity factor or "index" for the well, or both P_f and C may be determined by substituting numerical values of M and P_s at two or more rates of flow. The study indicates, for the range of production observed in the tests forming the basis of this report, that C is a constant in a given well for all rates of flow. In a number of wells, C did not change (within the limits of accuracy of the reported data) during an 8-month period while the wells were producing regularly or alternately flowed and shut in for periods of time. In a number of other wells C did not remain constant during an 8-month period. In those wells where C increased, the probable indication is that the wells were "cleaning themselves out" or that a readjustment of the sand particles immediately about the wells was reducing the resistance to flow of fluids into the well bores. When C decreased with time, or, in other words, when less mass of fluids entered the wells per pound drop in pressure through the sand, a condition of clogging at the sand face, or plugging of the perforations in the oil string, is suggested.

A study of several pairs of wells and one group of 6 wells producing from the same sands in the Kettleman Hills field showed that the "specific productivity" of reservoir sands, as indicated by the pounds of fluids flowing to the wells through 1 foot of sand thickness per 24 hours per pound drop in pressure, may be fairly uniform over extended areas. However, observations on other sets of flowing wells in the Kettleman Hills field showed that this condition does not always hold true and that neighboring wells producing from the same sands may differ considerably in "specific productivity."

Application of relations that may be found between rates of fluid production and differential pressures in producing sands will aid in developing a better understanding of reservoir performance and the related problem of well spacing. Since the straight-line relation discussed in this paper is merely an empirical statement of the facts found on analyzing limited field data and may not be supported completely on a rational basis, Bureau of Mines engineers invite contributions of oil-well production data and subsurface pressure and temperature traverses to be used in continuing their check and further analysis of what appears to be a useful relation.

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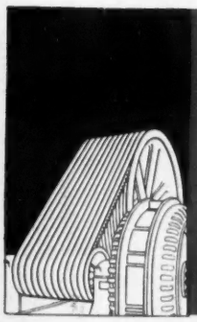

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Bradford Water Flooding Principles

MUCH VALUE MAY BE PROCURED BY REVIEWING BASIC OPERATIONS

By JOHN C. ALBRIGHT

PART 3—Water Operations

PROCURING an adequate supply of suitable water is one of the most important phases in flooding operations. Thus far in this series reviewing the practices in vogue at Bradford, the discussion has been limited to the results obtained, preliminary property inspection work, drilling both injection and producing wells, and producing operations. In this chapter, the third and concluding part of the series, the handling of water is to be the subject.

Numerous water sources are in use by operators of floods at Bradford, however, the principal ones are the sandy gravel beds found at shallow depths along the creeks that are abundant in this district. Large quantities, however, are produced and pumped from sources many miles from the center of the field. For example, Petroleum Reclamation Corporation produces, through its subsidiary The Reclamation Supply Corporation, about 17,000 barrels daily from wells along the Allegany River, which is located in New York State. The water is transported through a 24-inch pipe line to a distribution system leading to properties scattered throughout the field.

Water Should Be Purified

A greater portion of the water used was injected originally into the sand as it was produced, irrespective of the amount of silt and foreign matter contained in it. However, after numerous wells were found to be sealed off by the sand face becoming plugged, more attention has been paid to water conditioning and today it is recognized as a most important operation. Generally speaking, at this time the water is filtered under pressure through sand bed units as it travels from the water pumps to the wells. Other concerns use these filters on the supply lines, in which case the water is delivered to outside tanks then picked up by the flood pumps and delivered to the wells.

Some engineers who have investigated fresh water believe algae will thrive and multiply in total darkness, even within the sands after the water has been pumped through input wells. If this condition does exist, pore plugging will be accelerated with the loss of effective pressure, and, consequently, a lower ultimate oil recovery. To prevent the growth of this plant, some companies are using chlorine in the water. However, sufficient time has not elapsed since this practice was started to say definitely that it has advantages, nor can it be said that it is not useful.

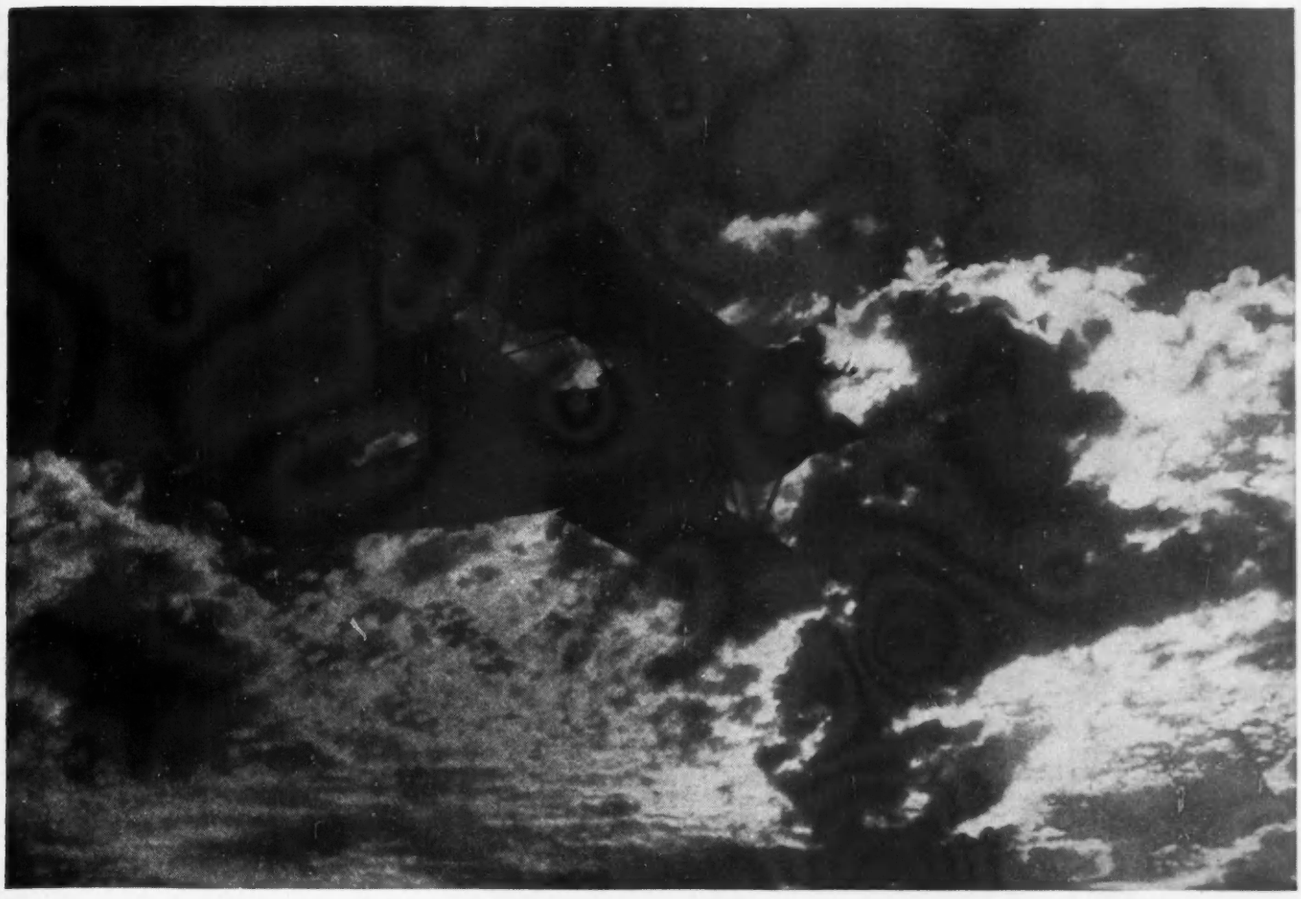
However, it is known that water, either filtered or unfiltered can be the means of causing considerable difficulty since the sand face will become plugged when iron oxide is carried into the well.

Many examples of sand face plugging may be found in the Bradford district. Such instances are generally overcome by using diluted hydrochloric acid. Wells so affected are disconnected from the water distribution system, after which a small diameter pipe string is lowered through the tubing. The diluted acid is siphoned through this pipe into the well. It is the usual custom to permit the acid to remain on the sand face about 48 hours, although some companies use a longer period of time and others a shorter duration. After this setting period, fresh water is siphoned through the small diameter pipe until it returns through the tubing to the surface, clear and free of foreign matter. One application of acid frequently is sufficient to clean the face of the sand so flooding may be continued.

Shut Downs Are Injurious

It is generally agreed that when a water flood has been started and pressures established, it is detrimental to the amount of oil that may be recovered ultimately for the pressure to be withdrawn for any length of time. One company was unfortunate enough to experience a fire that destroyed its pressure plant after production had been established. Repairs were made as rapidly as possible, but about 30 days expired before water again was entering the input wells under the same pressure as before the fire. Production obtained was only about half that being pumped prior to the shut down. No other obstacle had been encountered, such as plugged sand faces, and operating conditions had not been changed. Consequently, engineers were led to believe that interrupted pressures were solely responsible for the production loss. Some express the opinion that when water pressures are discontinued, that the water already in the sand body seeks its gravitational level, which would be in the lower part of the sand. As soon as pressures are resumed, large volumes of oil are sealed in pockets within the sand. These pockets are surrounded by water under pressure, holding them tightly in place as the new water traveled the route of least resistance.

Water lines are laid over the leases in a manner that will conserve pipe, the system depending upon the topography and other conditions. Lateral water lines from the main distribution system are connected through meters to the tubing in the injection wells. The surface equipment used on input wells is as simple as can be



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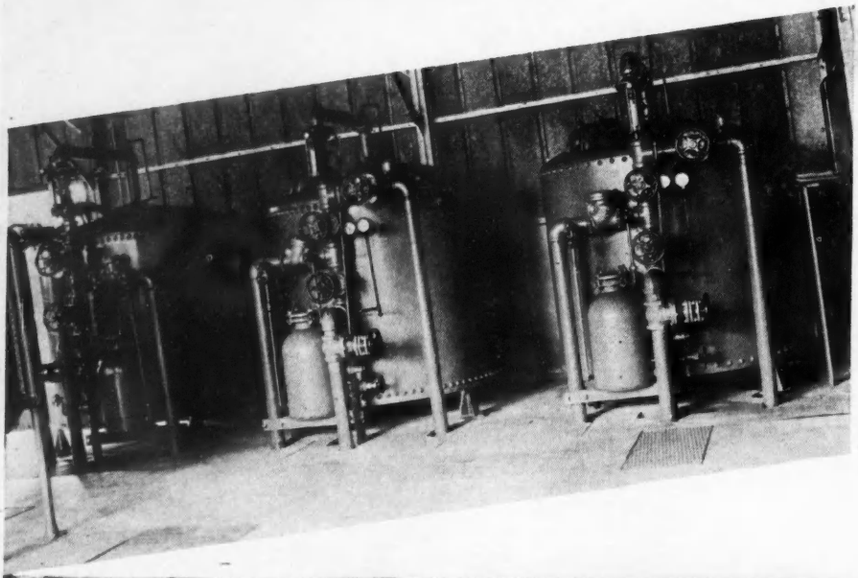
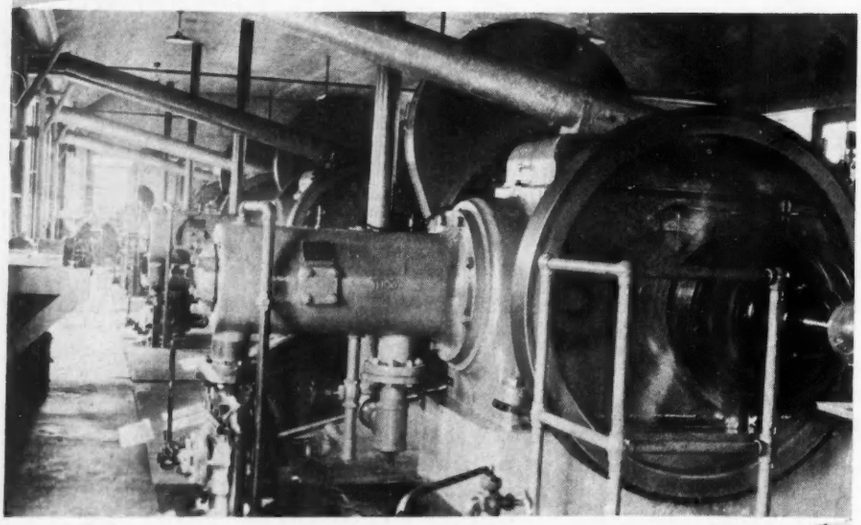
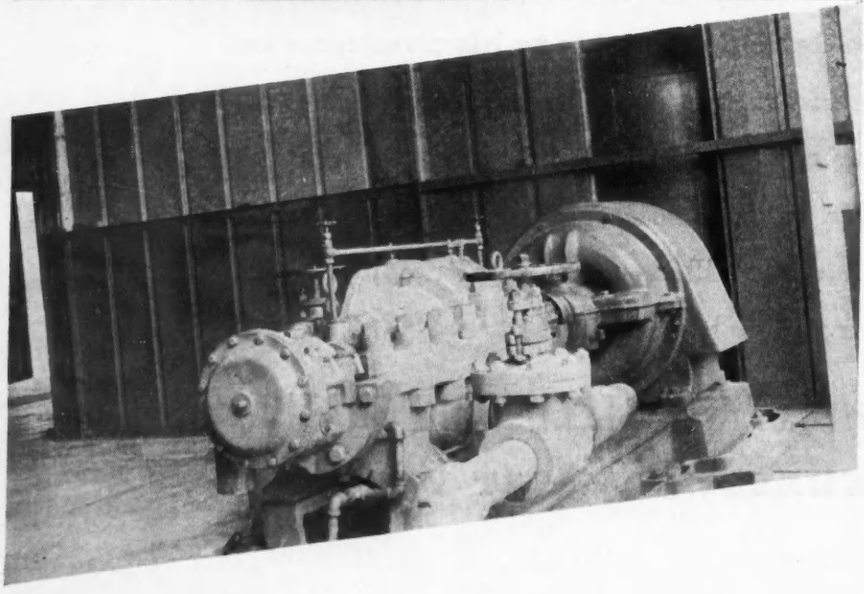






Equipment used by Bradford district operators for handling water in flooding operations varies greatly, but the above are a few typical scenes. At the top is a group of water filters at Olean Petroleum Company's Kanesholm flood. In the center picture are some compressors used for lifting water from wells by air. Below is a water pump employed to inject water into the oil producing sand.

installed. Exposed parts are boxed to prevent freezing during the winter. An adequate number of valves and gates are used to control the amount of water at each individual well. The water requirements at Bradford vary, but the usual well will require between 6 and 15 barrels of input water for each barrel of oil recovered by flooding. The average injection is between 8 and 10 barrels.

Various Equipment Used

Water flooding equipment, that is pumps and power units for injecting the water into the input well, varies from the previously explained use of pipe line pressure through the gamut of machinery to heavy-duty large horsepower oil engines and electric motor driven high-pressure centrifugal pumps.

Forest Oil Corporation, one of the largest water flood operators in the region, uses oil engines on many properties. The majority of these engines are connected directly to triplex, piston pumps built for high pressures. Some of the pumps are capable of exerting as much as 2000 pounds pressure on the sand. South Penn Oil Company uses similar equipment and hookup.

Olean Petroleum Company in the south end of the field produces water from a local gravel bed, and lifts the fluid to the surface with deep well motor-driven turbine pumps. This company has three types of pumps in use for injection purposes. The first installation in this company's power room was a vertical, motor-driven triplex pump; the second, an electric motor-driven vertical high-pressure centrifugal unit; the third is a horizontal multi-stage centrifugal pump connected directly to an electric motor. Either of the pumps may be used to pump the water, or all three may be operated simultaneously. The object of the three-unit installation is to preclude the possibility of a complete shut down of injecting work.

South Penn Oil Company operates its flood on the Blair, Davis & King property with single cylinder oil engines, having a power cylinder of 13 inches by 16 inches. The pumps are individual triplex piston types with four-inch bore and eight-inch stroke. These engines are designed for handling air as well as driving the water pumps. Air cylinders are used for lifting water from water producing wells drilled nearby. The pumps discharge water at 400 pounds pressure.

Pump rooms at Bradford, due to the cold winters, are ceiled to prevent water line and engine jackets from freezing.

MEN IN THE INDUSTRY'S NEWS

C. D. WATSON, in charge of proration for the Carter Oil Company with headquarters in Tulsa, has returned from a two weeks' trip to Mexico. Watson reports that government regulation of prices in the southern republic has resulted in lowering the quality of petroleum products.

E. J. SUNDERLAND, head of the pressuring department for Panhandle Eastern Pipe Line Company, Kansas City, Missouri, has left for a vacation at Lake of the Ozarks.

J. D. COLLETT and **CLAREL B. MAPES,** president and general secretary, respectively, of Mid-Continent Oil & Gas Association, Tulsa, were in Salt Lake City, Utah, last week, attending the western division session of the American Mining Congress.

JOHN BURNINGHAM, son of W. J. Burningham, managing director of Arthur Brown & Company, Ltd., agents for Mid-Continent Petroleum Corporation in England, left Tulsa for New York September 3. He had been working in the Mid-Continent refinery at West Tulsa, gaining practical experience in the oil business. He will sail from New York September 16.

EARL F. SMITH, LYNN G. SMITH and **F. J. NEWTON, JR.,** all of Bradford, have been granted a Pennsylvania state charter for the Smith Newton Company to "drill, produce, store, refine and deal in petroleum and natural gas." Capitalization is $800,000.

A. G. SPOONER, Calgary, Alberta, was re-elected president and managing director of Spooner Oils, Ltd., when shareholders held their annual meeting in Calgary last week. Other officers of the Canadian producing company are R. A. Brown, Sr., vice president; R. G. Spooner, secretary-treasurer; C. E. Snyder and A. W. Maguire, directors.

E. R. FILLEY, production department, The Texas Company, is vacationing in Minnesota and Canada.

H. D. PHILLIPS, president of Sinclair-Prairie Oil Company, has returned to Tulsa from a vacation in New Mexico.

A. M. McCORKLE, vice president of Stanolind Oil & Gas Company, Houston, is spending his vacation in Fort Worth, Texas.

J. L. GLEASON, division clerk for Stanolind Oil & Gas Company, Houston, Texas, is on vacation in San Antonio, Texas.

JACK W. COLE consulting petroleum engineer, Casper, Wyoming, has returned from a three-week vacation in Southern California.

W. R. FOSTER, professor of geology, University of West Virginia, has made Evanston, Wyoming, headquarters in making a thorough study of the Spring Valley area in that state.

E. J. SADLER of New York, vice president in charge of production and manufacturing for Standard Oil Company of New Jersey, headed a party inspecting holdings of subsidiaries of the company in Texas and Louisiana last week. Accompanying Sadler were: T. R. Armstrong, vice president of Pan American Foreign Corporation and other foreign subsidiaries; H. G. Burks and S. P. Coleman, refinery experts, members of the co-ordination committee; G. W. Gordon, president of Lago Oil & Transport Company, Ltd., and in charge of foreign refining; W. J. Haley, vice president of Lago Oil & Transport Company, Ltd., and in charge of refining in Europe; E. A. Holbein, co-odination officer; H. H. Hill, co-ordination and production; E. Holman, vice president of Standard Oil Company of Louisiana and Pan-American Oil Company; E. P. Salisbury, statistician; H. L. Shoemaker, secretary of the co-ordination committee; Chester F. Smith, in charge of domestic production; Edward F. Johnson, legal department; W. E. Pratt, director of Standard Oil Company of New Jersey; Richardson Pratt, budget department; F. W. Abrams, president of Standard Oil Company of Delaware; Winthrop Rockefeller, William Mautner, L. C. McCloskey, vice president of Imperial Oil Refineries, Ltd.; B. A. Myers, in charge of production for the Imperial Oil Company; C. H. Lieb, president of Carter Oil Company; M. J. Rathbone, president of Standard Oil Company of Louisiana; E. W. Murphree, R. R. Russell and Dr. N. E. Loomis of New York; R. S. Stratford, N. W. Boyer of Baton Rouge, Louisiana; H. J. Voorhies, E. W. Poorman, and E. H. Barlow of New York.

W. FLOYD CLINGER

Is head of Clinger Oil & Gas Company, Tidioute, Pa., and is president of the Pennsylvania Grade Crude Oil Association for the current year. Clinger is one of the progressive producers of the Pennsylvania region, and also is an officer in a Pennsylvania refinery. His home is in Warren, Pa., where he formerly published a newspaper.

A. S. HAYES, for 7 years with Kettleman North Dome Association as petroleum engineer, has resigned to join Bell & Loffland, Inc., drilling contractors, as technical adviser. Prior to going with the association, Hayes was petroleum engineer with General Petroleum Corporation.

J. B. VICTERY, Gulf Oil Corporation, Houston, has returned from his vacation.

M. T. HALBOUTY, Merit Oil Company, Houston, has returned from a trip to Minneapolis, Minnesota.

CURTIS B. DALL, former son-in-law of President Roosevelt, arrived in Dallas, Texas, September 2 to inspect his several holdings in Callahan and Wise counties. He came to Dallas after spending a vacation with his two children in Wisconsin.

C. V. TERRELL, chairman of the Texas Railroad Commission, was the principal speaker at the annual oil men's banquet held in Colorado, Texas, September 9.

R. A. BROWN, SR., president of Turner Valley Royalties, headquarters in Calgary, Alberta, was a Toronto visitor last week. He was accompanied by J. W. Moyer, secretary of the company.

H. L. PAYTON, production and pipe line scout for Sun Oil Company in the East Texas field, was in a serious condition from loss of blood when his left arm was sheared off in an automobile accident September 7, on the Kilgore-Tyler highway. His car was sideswiped by a truck.

M. JAKE BONHAM, assistant district land man for Continental Oil Company in the Fort Worth division, is utilizing his vacation in visiting some of the popular resorts in New Mexico and Southwest Texas.

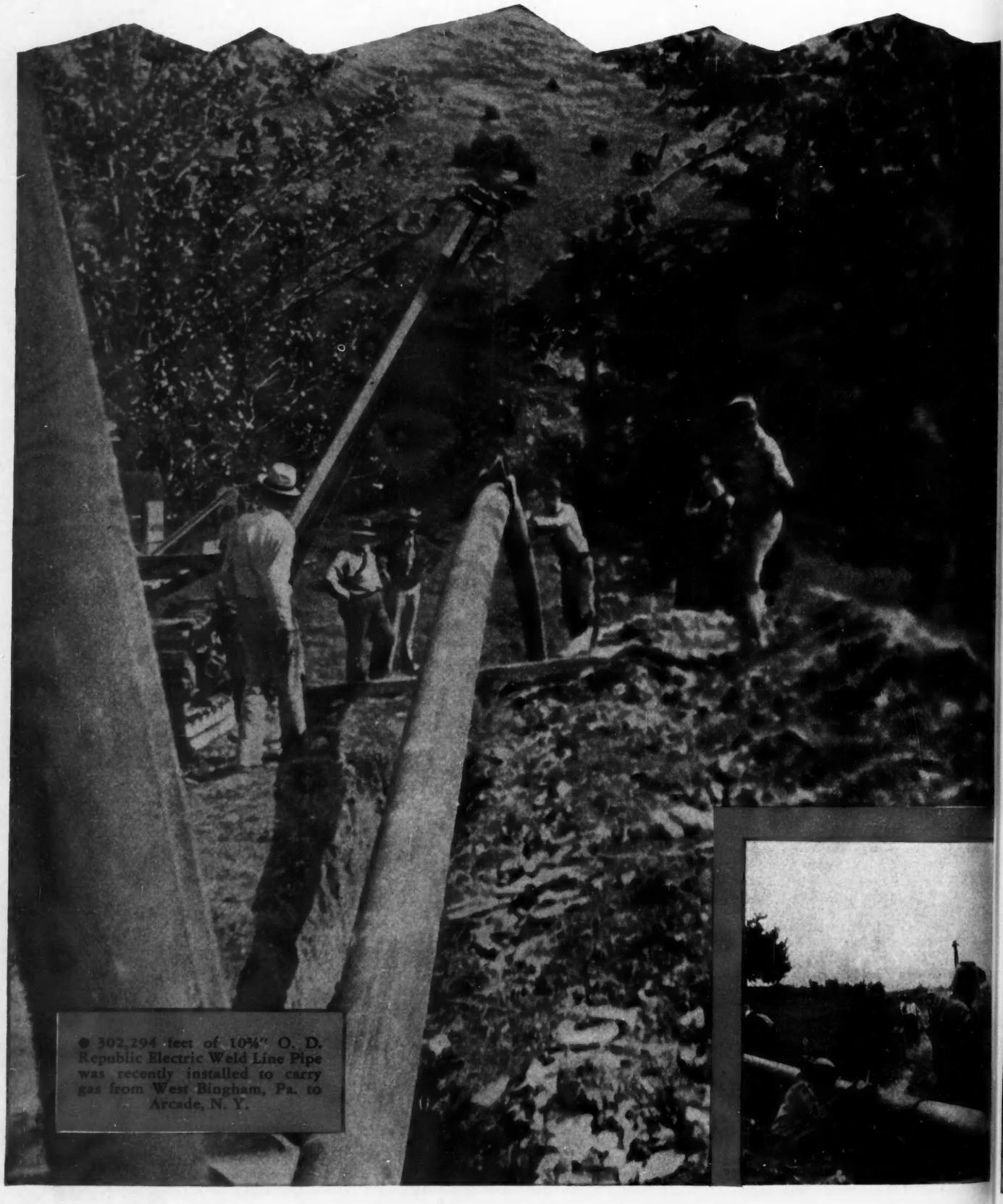
JOHN G. (Jack) PEW, an official of the Sun Oil Company, has returned to Dallas headquarters with a prize coat of tan obtained during an extended vacation with his family in California.

BERT FIELDS, Dallas producer and drilling contractor, is in California on a vacation.

H. S. JONES, Fort Worth operator and head of Midland Investment Company, has returned from Point Barrow, Alaska, where he aided Jimmy Mattern in searching for the Russian fliers lost in attempting a flight across the North Pole. Jones and Mattern are scheduled to make a non-stop flight across the polar region to Moscow next summer.

BERT WEEKLEY, president of Weekley Oil Corporation, and George Calvert of Broderick & Calvert, Inc., pioneer op-

where the going



● 302,294 feet of 10¾" O. D. Republic Electric Weld Line Pipe was recently installed to carry gas from West Bingham, Pa. to Arcade, N. Y.

is ROUGH

USE PIPE THAT IS TOUGH

REPUBLIC STEEL

ELECTRIC WELD

HIGH YIELD POINT WITH HIGH DUCTILITY

LINE PIPE

PERFECTLY ROUND . . . UNIFORM DIAMETER . . . UNIFORM WALL THICKNESS . . . EASY TO BEND, LINE UP AND WELD IN THE FIELD . . . UNUSUALLY STRONG . . . FREE FROM SCALE . . . LENGTHS TO 50 FEET WITHOUT MID-WELD . . . IN SIZES UP TO 16" O. D.

Republic Steel Corporation

GENERAL OFFICES . . . CLEVELAND, OHIO

erators in West Texas, left Fort Worth last mid-week for a big-game hunt in British Columbia and Alaska.

PAUL R. MARTIN, chief scout for The Pure Oil Company in the Fort Worth division, is vacationing in Southwest Texas.

EARLE SHORT, independent operator of Houston, Texas, recently returned from a trip to California.

W. A. GILLINGHAM, engineer with Schlumberger Well Surveying Corporation, Houston, Texas, has returned from an extended trip to England. He was accompanied by his parents.

R. CLIFF BOWLES, chief geologist for Standard Oil Company of Kansas, is on an inspection trip through the company's properties in the North Sweden pool.

JOHN O'NEIL, president of Wellington Oil Company, San Antonio, Texas, was a visitor in Houston, Texas, last Wednesday.

F. J. LAFAVIERE, independent operator of Casper, Wyoming, was severely injured in an automobile accident near Edgerton, Wyoming, August 28. He is in Memorial Hospital, Casper.

» FIRST TICKETS to the Oil-World Exposition, to be held in Houston, October 11 to 16, were presented to officials of the show at a recent meeting. John R. Suman, president of the exposition, received ticket No. 1. The presentations were made by Frank S. Carothers, branch manager of Norvell-Wilder Supply Company, which concern purchased the first 1000 ducats. Shown in the picture with their tickets are, left to right: Ed G. Lenzner, general manager of Oil-World Exposition, Inc.; Frank S. Carothers; Wallace Wilson, president, Wilson Supply Company; John R. Suman, vice president, Humble Oil & Refining Company; W. L. Childs, vice president, Reed Roller Bit Company; Chase Sutton, division manager, Pure Oil Company; and George A. Hill, Jr., president, Houston Oil Company of Texas.

Bill Combs, scout for Humble Oil & Refining Company, Houston is shown scouting Shell Petroleum Corporation's Texas Public Service 4, at Nome, which blew out and cratered two weeks ago after discovering a new gas sand.

W. S. ARTHURS, chief scout for Skelly Oil Company, Tulsa, recently returned to his desk after an absence of more than two months. Illness during vacation was followed by a leg infection, making an operation necessary.

DONALD REIN, formerly connected with Rein Company, Houston, Texas, has entered the oil business, purchasing half interest in the holdings of John G. Mayo, Houston independent operator.

HERBERT GREENFIELD, president of the Calgary (Alberta) Gas and Oil Association, was in charge of a tour of the Turner Valley field taken last week by men of eastern Canada, England, and the United States enroute to the eleventh annual convention of the Canadian Chamber of Commerce at Vancouver.

BOB JEANS, Humble Oil & Refining Company, Houston, is vacationing in New Mexico.

H. L. LaMAR, superintendent for Trinidad Leaseholds, Limited, Guayaguayare, Trinidad, is visiting in California.

DIED:

CHARLES A. CHENEY, 52, Tulsa geologist who was killed in an automobile accident near Mattoon, Illinois, September 2, was buried at Milwaukee, Wisconsin, September 5. Mrs. Cheney and Cecil Barnhart, both of whom were injured, were reported recovering in a Mattoon hospital.

WILLIAM THOMAS MUIR, 26, Turner Valley oil field worker, died September 4 of injuries suffered when a timber fell on him at Firestone Petroleum's well in the Alberta field. He is survived by a brother.

C. W. "WATT" CAMPBELL, 60, drilling contractor in Tulsa since 1913, died September 2 following a two-year illness. He is survived by his wife, one brother, one sister, a niece, a sister-in-law, and a nephew.

DAN L. PERKINS, geologist, Shreveport, Louisiana, died in St. Louis, Missouri, of gunshot wounds recently received at the hands of a robber. He was 51 years old.

HASKELL KIRKSEY, oil field worker of Lockhart, Texas, was killed on a derrick near Corpus Christi, Texas, September 4.

DENNIS B. McNAIR, 54, well known operator of Shreveport, Louisiana, died August 29. He was active in Texas, Oklahoma and Louisiana. He is survived by one brother and two sisters.

Revenue and customers of natural gas increase

New York. — Domestic customers served by manufactured and natural gas utilities totalled 15,787,500 June 30, an increase of 223,000 during the first six months' interval, according to Paul Ryan, chief statistician, American Gas Association.

A total of 823,000 gas ranges were sold in the country during the first half of 1937, an increase of 22 percent over the first six months of 1936.

Manufactured gas industry revenues totalled $186,246,400 for the first six months, practically unchanged from a year ago. Revenues from industrial and commercial uses of manufactured gas gained 6 percent. Revenues from domestic uses, such as cooking, water-heating, refrigeration, etc., were 2 percent less than for the corresponding period of 1936.

Revenues of the natural gas industry for the first six months amounted to $247,603,300, a gain of 7.2 percent over a year ago. Revenues from industrial uses increased 18 percent, while revenues from domestic uses gained 3.1 percent.

Prices Are Holding

NO IMPORTANT CHANGES SINCE REDUCTIONS IN PENNSYLANIA

IN THE face of recent over-production of crude oil and of excessive refinery operations, the oil industry's markets have continued fairly firm.

This steadiness apparently is based largely on the prospect for better conditions in the weeks ahead.

There have not been any further changes in crude oil prices, following the recent reductions in Pennsylvania and in Turner Valley field, Canada. It appears that the reductions in those areas reflected, primarily, local conditions. In most of the other districts of the country, there do not appear to be any immediate threats of crude price reductions.

Refined Prices Holding

In the refined oil markets, there have not occurred recently any important changes of prices, and the changes that have occurred have been increases.

In the Pittsburgh district, where a retail gasoline price war was in effect for about five weeks, most of the service stations now are posting normal prices. During the war, the prices went, in some instances, as low as 14 cents a gallon, including 5 cent taxes, at some stations; but now most of the stations are posting a minimum of 20 cents a gallon.

Another increase in prices that has occurred lately was the increase of ⅛ cent a gallon posted by Standard Oil Company of Ohio on kerosene in tank car lots. The company stated that this increase was made following a similar advance in the Pennsylvania market September 1.

Statistics Less Favorable

Any optimism regarding the market at present must be based rather on the prospect for better conditions than on recent statistics. The figures on the industry's operations lately have been less satisfactory than in some recent weeks.

Crude oil production finally has turned downward, but only after having been materially excessive for several weeks. After having risen to an all-time peak of 3,731,450 barrels daily in the week ended August 28, United States crude oil production declined in the week ended September 4 about 50,000 barrels; and for the week ended September 11, another important decline was in prospect.

Stocks of crude oil in the United States are not materially larger than one year ago, and the increase that has occurred within the past year has not been as great as the rise in the demand for petroleum. Nevertheless, no encouragement has been offered by the recent additions to crude stocks, under the excessive allowables that prevailed.

Refinery Operations Excessive

The recent over-production of crude oil was largely responsible for the fact that refinery operations have exceeded proportions justified by the market conditions. In the week ended September 4, crude oil runs to stills increased 25,000 barrels daily, to a new all-time peak of 3,445,000 barrels.

With the refineries operating at this high level, too much gasoline was turned out in the week ended September 4. In that seven-day period, there was an addition of 51,000 barrels to the total stocks of finished and unfinished gasoline in the United States, the first addition that has occurred since last spring. Normally, there should have been a further reduction of gasoline stocks, but the excessive refinery runs reversed the usual trend. The total inventories of gasoline on hand September 4 amounted to 67,048,000 barrels.

Since the usual decline in gasoline stocks did not occur, the amount left on hand did not compare as favorably with the similar date last year as some earlier weeks this year had done. The gasoline supplies on hand September 4 were 14.6 percent larger than the inventories of 58,493,000 barrels held on September 5 last year.

Fuel Oil Stocks Up

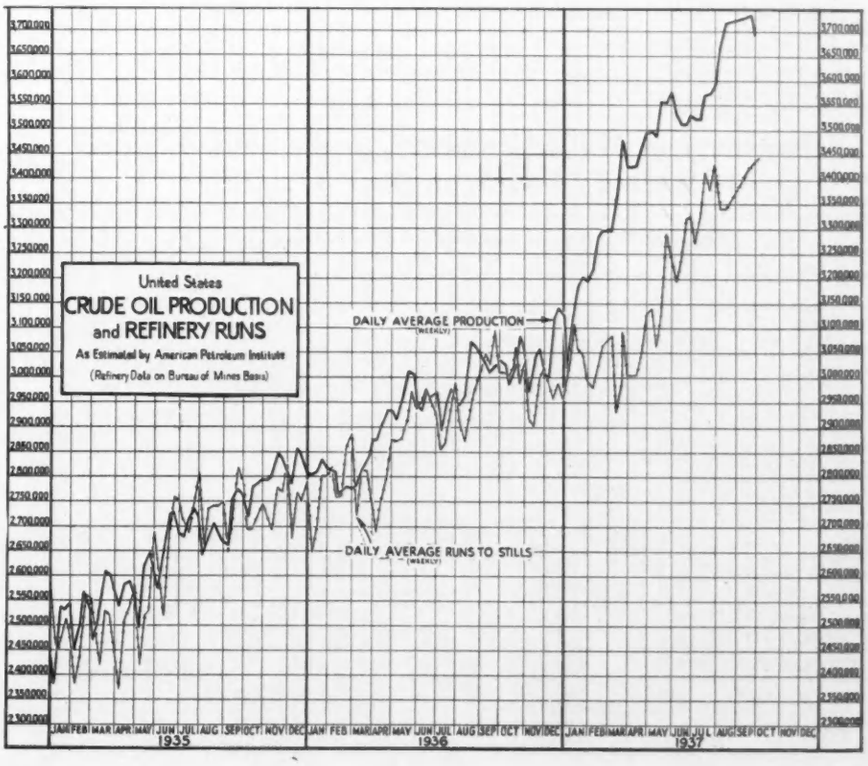
Fuel oil stocks, similarly, reflect the recent high output of the refineries. Whereas fuel oil stocks a few weeks back were lower than on the corresponding dates a year ago, they are now larger than the supply held at this time last year. On September 4, this year, the gas and fuel oil stocks totaled 113,443,000 barrels. That was 2,162,000 barrels more than the industry had on hand September 5, 1936, when the supply totaled 111,281,000 barrels. The present stocks of fuel oil, consequently, are about two percent larger than at this time last year. But such an increase is amply warranted by the gain that has occurred in fuel oil consumption. The demand for burning oils has been running this year about 10 percent higher than last year.

Recent additions to the stocks of fuel oils have occurred in response to a strong demand and to higher prices. Although the markets for fuel oils are especially strong, these additions to stocks probably will tend to hold prices around the present levels.

Fuel Prices Criticized

Incidentally, the industry has received considerable adverse criticism lately because of the advances that have been made in fuel oil prices, immediately in advance of the heavy consuming period of fall and winter. This criticism perhaps will tend to hold prices down.

Another circumstance that may have



the effect of holding fuel oil prices down is the recent slowing down of purchases of domestic oil burners. Shipments of oil burners by American manufacturers in July, numbering 16,404, were 1046 lower than the shipments of July last year, when the total was 17,450 burners. However, the shipments of oil burners in the first seven months of 1937 have been considerably greater than shipments in the similar period last year, this year's figure being 93,746 compared with 78,702 burners shipped in the first seven months of 1936.

Crude Prices Reduced

Following the reductions of 22 to 27 cents a barrel on Pennsylvania grade crude oil September 1, another reduction was made in the Eastern States region on the following day. The Joseph Seep Purchasing Agency, effective September 2, reduced the price for Corning, Ohio, crude oil 15 cents a barrel, to a new price of $1.27 per barrel. The last previous change on Corning grade crude was a 10 cents a barrel increase made on January 29, this year.

Effective September 1, reductions were made in prices of Turner Valley, Canada, crude oil ranging from 19 to 43 cents a barrel. That reduction occurred because of rapidly mounting crude production at Turner Valley, and because of competition of Mid-Continent and Montana crude, in supplying the Canadian refineries.

The recent reductions in prices of Pennsylvania crude oils, similarly, were attributed to local conditions, rather than to the general situation. The Pennsylvania grade crude fields for some time have been over-producing the market requirements, and the excess has been going into storage. Furthermore, runs to refineries in that district have been curtailed lately in anticipation of smaller winter demand. It is pointed out, in this section, that even at the present lower prices, Pennsylvania oils still show a greater improvement over a year ago than the crudes of most other districts of the country.

CRUDE OIL PRICES

Complete tables of prices paid for crude oil at the well in principal fields is shown on page 56 of issue of September 6. Hereafter this schedule will appear only in the first issue of each month.

Refinery Market

Although tank car prices throughout most of the country have continued largely unchanged in recent weeks, the refined oil markets have displayed weakness in various areas lately. In East Texas, particularly, the refinery market has been weak. Rumors have been current lately in that district to the effect that refiners were facing a possible wholesale gasoline price war. Although prices at the East Texas plants remained unchanged in many instances, some of the owners of refineries there recently reduced their prices and it appeared possible that the whole market would be dragged down.

That situation in the East Texas wholesale gasoline market has been largely responsible for sub-normal retail prices in various districts of Texas and of some neighboring areas of the Mid-Continent.

New Turner Valley Prices

In an effort to compete with crude from the Mid-Continent area and Montana fields now being supplied to refineries at Regina and Moose Jaw, prices paid for Turner Valley crude by Imperial Oils, Ltd., and the British American Company, principal buyers in the field, reductions ranging from 19 to 43 cents a barrel have been announced.

The new scale is based on a $1.36 per barrel price for 40 gravity crude, with a two-cent advance for each degree increase in gravity to $1.84 for 64.9 test crude. The old scale included a $1.55 price for 40 degree and $2.27 for 64.9 gravity.

At the same time, the premium formerly paid for clear naphtha was elimi-

Trends of United States Production and Stocks

(Figures American Petroleum Institute, except Crude Stocks, Bureau of Mines)

WEEK ENDED	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	Gas & Fuel Oil Stocks (Barrels)
January 2, 1937	3,121,400	3,030,000	287,659,000	62,661,000	106,330,000
January 30	3,194,050	2,995,000	285,384,000	69,540,000	102,078,000
February 27	3,296,100	3,085,000	288,121,000	78,786,000	99,534,000
March 27	3,431,300	3,060,000	293,587,000	*83,538,000	96,591,000
April 24	3,496,400	3,125,000	300,737,000	82,303,000	94,100,000
May 1	3,497,450	3,140,000	303,249,000	81,407,000	94,291,000
May 29	3,573,000	3,245,000	306,445,000	78,758,000	96,139,000
June 26	3,529,600	3,235,000	307,679,000	75,427,000	100,395,000
July 31	3,591,900	*3,425,000	308,250,000	70,872,000	108,209,000
August 7	3,651,150	3,340,000	307,922,000	69,216,000	108,597,000
August 14	3,718,600	3,340,000	308,737,000	69,087,000	109,664,000
August 21	3,729,350	3,415,000	309,699,000	67,260,000	110,493,000
August 28	*3,731,450	3,425,000	309,506,000	66,997,000	112,111,000
September 4, 1937	3,692,550	*3,445,000	.....	67,048,000	113,443,000
September 5, 1936	3,008,550	3,025,000	300,788,000	58,493,000	111,281,000

* All Time peak.

Summary of Wells Completed in the United States Week Ending September 11, 1937

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Total 1937	Total this Date 1936
Alabama	....	....	....	....	.....	1	2
Arkansas	4	3	....	1	620	81	73
California	30	27	....	3	12,800	983	756
Colorado	2	2	....	....	146	10	10
Florida	....	....	....	....	.....	1	2
Illinois	10	7	....	3	3,025	137	4
Indiana	6	4	1	1	45	90	143
Kansas	54	38	5	11	48,966	1,846	1,160
Kentucky	7	1	1	5	3	250	199
Louisiana	31	20	6	5	9,646	669	732
Michigan	24	15	....	9	4,795	656	550
Mississippi	....	....	....	....	.....	10	5
Montana	4	3	....	1	551	138	112
Nebraska	....	....	....	....	.....	....	.....
New Mexico	14	12	2	....	5,088	498	406
New York	....	....	....	....	.....	10	.....
Ohio	30	11	13	6	133	1,038	1,310
Oklahoma	47	30	3	14	15,515	2,202	2,054
Pennsylvania	6	2	3	1	80	135	.....
Texas	334	266	6	62	362,104	10,698	8,823
Utah	....	....	....	....	.....	....	.....
West Virginia	23	3	18	2	14	637	465
Wyoming	....	....	....	....	.....	74	56
Total this week.	626	444	58	124	463,531	20,164	16,865
Total last week.	624	456	36	132	633,286	....	.....
Total this year.	20,164	14,007	1,627	4,530	16,874,812	....	.....

Comparison of Permits Granted for New Wells

STATE	Week Ending Sept. 11	Total this Mo.	Total this Year	Total this Date Last Year	1936 Year Total
Arkansas	7	12	171	67	103
California	34	64	1,118	741	1,054
Louisiana	28	59	886	800	1,107
Kansas	78	129	1,960	1,253	1,873
Michigan	16	33	693	514	762
Oklahoma	46	89	2,049	2,045	2,594
Texas	375	677	12,779	10,409	15,582
Total	584	1,063	19,656	15,829	23,075

Makes Big Decline

U. S. PRODUCTION AVERAGE IS 88,085 BARRELS LESS LAST WEEK

AFTER having run at all time record levels in the past several weeks, United States crude oil production declined in the past week, ended September 11, as output of the wells only averaged 3,630,025 barrels daily. That was 88,085 barrels a day less than in the previous week, and 120,725 barrels a day more than the average daily production recommneded for September by the Bureau of Mines.

Since the state allowables for September have been somewhat reduced, in comparison with the allowables for the month of August, the production in the first full week of September is more in line with market requirements.

The decrease in production last week resulted from sharp declines in Texas and Oklahoma and slight drops in Kansas and Louisiana, which outweighed increases in California and New Mexico.

Texas last week averaged 1,481,400 barrels daily, which was 70,000 barrels a day less than in the previous week, but still 67,800 barrels a day more than the Bureau of Mines recommended.

Oklahoma output decreased 38,025 barrels to 604,500 barrels a day, and was 29,100 barrels under the indicated demand.

Kansas showed a decline of 4,135 barrels, averaging 188,400 barrels a day, which was 12,500 barrels a day less than the estimated demand.

Louisiana likewise showed a small decline of 3,975 barrels a day, averaging 259,475 barrels daily, which was and 45,800 barrels daily more than the Bureau of Mines estimate.

California showed an increase of 16,000 barrels daily over the previous week, averaging 684,000 barrels a day, and 45,800 barrels daily more than the indicated demand.

New Mexico also slightly increased its daily production to 114,100 barrels, which was 100 barrels a day more than in the previous week and 12,700 barrels more than the Bureau of Mines recommendation.

nated, making the price for both clear and discolored naphtha $2.36 a barrel of 35 gallons, the former price for discolored naphtha. Clear naphtha had been bringing $2.60. Products of natural gasoline plants have also been reduced—a product having a Reid vapor pressure of 17 pounds now bringing $2.30 a barrel compared with $2.33 paid previously.

Mid-Continent Prices

Tank car prices at Mid-Continent refineries late last week were largely the same as for the preceding several weeks.

U. S. motor gasoline continued to range in the Oklahoma market about as follows: 62 octane and below, 5 to 5¼ cents a gallon; 63 to 67 octane, 5⅜ to 5¾ cents; and 68 to 70 octane, 6 to 6⅛ cents.

Corresponding prices in the Chicago market were: 4¾ to 5 cents, 5¼ to 5⅜ cents, and 5⅝ to 6 cents.

At East Texas refineries the most common product, 60-62, 400 end point gasoline, ranged from 5⅛ to 5¼ cents a gallon.

Kerosene prices f.o.b. Oklahoma refineries ranged from 4 to 4¼ cents a gallon for the 41-43 water white grade, and from 4¼ to 4⅜ cents for the 42-44 water white grade. Corresponding prices in the Chicago market were: 4 to 4⅛ cents and 4 to 4⅜ cents.

United States Crude Oil Production

Estimates Compiled by The OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Recommendation (Daily in Sept.)	ACTUAL PRODUCTION: BARRELS DAILY FOR WEEK ENDING September 11	September 4
TEXAS—			
Texas Panhandle	.....	81,200	85,600
North Texas	.....	75,100	75,400
West Central Texas	.....	33,600	33,600
West Texas	.....	221,300	244,800
East Central Texas	.....	114,100	130,400
East Texas Field	.....	475,500	474,200
South Texas	.....	271,200	277,800
Texas Gulf Coast	.....	209,400	229,600
Total Texas	1,413,600	1,481,400	1,551,400
OKLAHOMA—			
Oklahoma City	.....	148,775	165,500
Seminole Area	.....	122,075	111,550
Crescent	.....	8,000	10,125
Lucien	.....	14,025	15,600
Fitts	.....	82,900	89,250
Edmund	.....	15,500	11,600
Moore	.....	9,725	12,500
Others	.....	203,500	219,650
Total Oklahoma	633,600	604,500	642,525
KANSAS—			
Ritz-Canton	.....	4,975	5,875
Chase	.....	6,875	6,725
Hollow-Nikkel	.....	2,675	2,775
Sedgwick	.....	3,725	4,025
Burrton	.....	14,175	14,500
Lorraine	.....	3,475	2,925
Russell County	.....	36,375	37,625
Silica	.....	17,200	18,460
Others	.....	98,925	99,625
Total Kansas	200,900	188,400	192,535
LOUISIANA—			
North Louisiana	.....	83,075	87,750
South Louisiana	.....	176,400	175,700
Total Louisiana	247,900	259,475	263,450
ARKANSAS	29,900	31,750	32,100
CALIFORNIA—			
Long Beach	.....	58,000	58,000
Santa Fe Springs	.....	43,000	43,300
Huntington Beach	.....	37,500	35,200
Dominguez	.....	30,000	28,500
Inglewood	.....	16,000	14,500
Ventura Avenue	.....	35,000	35,000
Seal Beach	.....	9,000	9,000
Midway-Sunset	.....	74,500	72,000
Elwood	.....	8,500	8,000
Kettleman Hills	.....	81,000	79,000
Mountain View	.....	17,500	17,000
Playa del Rey	.....	8,000	8,200
Wilmington	.....	56,000	56,000
Others	.....	210,000	204,300
Total California	638,200	684,000	668,000
MOUNTAIN STATES—			
Wyoming	55,900	56,300	59,700
Montana	18,200	17,800	18,100
Colorado	5,000	4,800	4,700
Total Rocky Mountain States	79,100	78,900	82,500
NEW MEXICO	101,400	114,100	114,000
EASTERN STATES	124,300	138,900	124,200
MICHIGAN	40,400	48,600	47,400
Total United States	3,509,300	3,630,025	3,718,110

Secretary Ickes to address I. P. A. A. annual meeting at Houston Oil Show

Houston.—With every indication that this year's annual meeting of the Independent Petroleum Association will be its largest convention, elaborate plans are being made for the three-day sessions to be held October 14, 15 and 16 during the week of the Oil-World Exposition at Houston.

Harold L. Ickes, secretary of the interior, who will attend the oil show will be the main speaker at the I.P.A.A. annual banquet.

Over 18,000 invitations have been sent to members of the Independent Petroleum Association, and according to C. E. Buchner, executive manager, the largest attendance ever secured by the Association is anticipated. The headquarters for registration, conduct of business and holding of meetings will be the Rice Hotel. Special badges are being prepared for the various officers, directors and members by the Oil-World Exposition management to enable all I.P.A.A. members to attend the show without charge.

Economic Discussions

In addition to the annual business meeting and election of officers, the program will include discussions on topics of importance to the oil industry in general and to independent operators in particular. Speakers will be men who have made a thorough study of different problems confronting the industry. The present officers of the Association are: Chas. F. Roeser, president; H. B. Fell, executive vice president; Russell B. Brown, general counsel; T. J. Stewart, assistant to the president; and C. E. Buchner, executive manager.

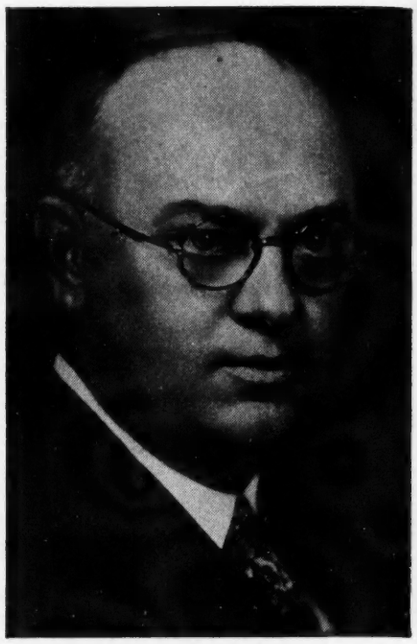
Secretary Ickes has advised that he will attend the convention and will be the main speaker on the program of the annual banquet of the I.P.A.A. in the City Auditorium, Friday evening, October 15, 1937. The maximum seating capacity for dinner at the City Auditorium is 2500, and it is anticipated that all reservations will be taken up well in advance of the dinner and that there will be a shortage of seating capacity. This is the largest hall available at this time where a dinner can be staged, since the Oil-World Exposition will occupy the entire new Exposition Building with exhibits. Following the banquet, there will be a dance in the auditorium.

Railroads Reduce Fares

Reduced railroad fares have been arranged for by the Oil-World Exposition so that all who attend the Houston show during the week of October 11 to 16, inclusive, can take advantage of the reduced rates. Special certificates are being provided for this purpose by the exposition management and anyone planning to attend the Independent Petroleum Association meeting as well as those going to Houston for other meetings to be held at the Oil Show may obtain a reduced fare certificate by addressing an application to Ed Lenzner, general manager, Oil-World Exposition, Inc., Petroleum Building, Houston. Anyone who boards the train without this special certificate will not be entitled to the reduced rate.

Other Meetings Planned

Other association meetings are now being arranged by the Association Conventions Committee under the direction of Chase Sutton, chairman, and E. G. Lenzner, assistant chairman. In addition to C. E. Buchner, who has charge of the meeting of the Independent Petroleum Association of America, the committee consists of Wm. V. Vietti for the American Institute of Mining and Metallurgical Engineers; Carl Hickman for the American Petroleum Institute, Gulf Coast Division; Phil F. Martyn for the Houston Geological Society; W. B. Preston for the American Society of Mechanical Engineers; T. G. Price, for the transportation department meeting; A. T. McDannald, in charge of the Drilling Contractors Meeting; James Anderson, vice president of Humble Oil & Refining Company, and George A. Hill, Jr., president of Houston Oil Company. In addition to association meetings there will also be several specialized technical conferences.



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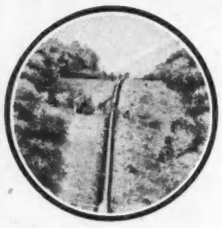
PIPE LINE NEWS



Permian Basin fields get Humble outlet.

* * *

Two South Texas projects get underway.

Pipe line outlet for the Wasson and Bennett fields, largest oil areas in the north portion of the West Texas Permian Basin, will be provided shortly by Humble Pipe Line Company. Right-of-way and pipe have been purchased for 37 miles of 6-inch welded line to to connect the wells in the Wasson field New Mexico. Gathering lines needed to connect the wells in the Wasson field and outpost producers in southwestern Yoakum County may equal the trunk line in mileage.

Oil will be routed via New Mexico, then through the company's 8-inch carrier to Wink, Texas, which has a capacity of 20,000 barrels daily.

Contract for the laying of 70 miles of 6-inch welded pipe has been let to Williams Brothers Company of Tulsa. The line, that of Duval Pipe Line Company, will extend from the North Sweden field in Duval County to tidewater at Corpus Christi, Texas. Construction has been started, and it is expected the line will be finished the latter part of this month.

Ricaby Line Started

Contract has been let and work will be under way as soon as materials arrive for 16-mile extension of Valley Pipe Line Company's 5½-inch system to the Ricaby district in Starr County. Present terminus of the line is at the Samfordyce field on the Hidalgo-Starr County line.

The stringing of the pipe will be done by Dobbs & Dobbs of Sullivan City.

This project will provide an outlet for the prolific new shallow Ricaby and South Ricaby fields, now in process of development. Oil will be handled via the trunk system to deep water port at Port Isabel.

Eastern Pipe Line Company, a San Antonio concern, will erect a gathering system in the area for the purpose of becoming a general buyer.

Revenue and customers of natural gas increase

New York.—Domestic customers served by manufactured and natural gas utilities totaled 15,787,500 June 30, an increase of 223,000 during the first 6 months interval, according to Paul Ryan, chief statistician, American Gas Association.

A total of 823,000 gas ranges were sold in the country during the first half of 1937, an increase of 22 percent over the first six months of 1936.

Revenues of manufactured and natural gas utilities aggregated $433,849,700 for the first 6 months of 1937, an increase of 4 percent over the corresponding period of 1936. Revenues from industrial and commercial users increased 11.4 percent, while revenues from domestic customers gained 1 percent.

Manufactured gas industry revenues totaled $186,246,400 for the first 6 months.

Revenues of the natural gas industry for the first 6 months amounted to $247,603,300, a gain of 7.2 percent over a year ago. Revenues from industrial uses increased 18 percent, while revenues from domestic uses gained 3.1 percent.

Tulsa.—Arrangements have been made for the purchase of gas recently obtained in Gillespie and Moran's Gaines 1, NE SW SW NWc SW 20-6n-7e, southeast Seminole County, Cities Service Gas Company is reported planning the laying of an artery to the location. The test, a semi-wildcat on the same tract as a previous dry hole which showed for strong gas pressure near 2700 feet, made a gauged volume of 34,100,000 cubic feet from an unidentified sand strata at 2745.

A. I. M. E. schedules two meetings in October

Two early October meetings, one at Los Angeles on October 1 and one at Oklahoma City, October 7 and 8, have been announced for the Petroleum Division of the American Institute of Mining and Metallurgical Engineers.

R. P. McLaughlin, associate chairman, has received many suggestions for the technical program from members in California and is turning over the detail of arrangements to the program committee headed by Ernest K. Parks. Two papers, already submitted, are: "Effect of Pressure Upon the Viscosity of Air, Methane, and Two Natural Gases," by B. H. Sage and W. N. Lacey; and "Flow Equilibria of Two Immiscible Liquids in Unconsolidated Sands," by E. N. Dunlap.

The Institute will be represented officially by President Allen and Secretary Parsons.

For its second fall meeting, at Oklahoma City, the Petroleum Division will use the Biltmore Hotel as headquarters. An ample and diversified technical program is assured, as is indicated by the following tentative list of papers:

"Shear Strength of Muds," by Benjamin C. Craft; "Oil Formation in Mud," by Reed; "Intensive Mud Weighting," by H. E. Gross; "Stage Separation of Crude Oil-Gas Mixtures," by G. O. Kimmel and R. L. Huntington; "Use of Equilibrium Constants in Production Engineering," by D. L. Katz; "Oil Treating," by Mauney; "Pressure Distribution in Oil and Gas Reservoirs," by A. J. Miles and Eugene A. Stephenson; "Steady and Unsteady Flow of Oil-Gas Mixtures Through Unconsolidated Sand," by L. S. Reid and R. L. Huntington; "Effect of Pressure Upon Viscosity of Air, Methane and Two Natural Gases," by B. H. Sage and W. N. Lacy; "Methods of Testing Oil Sands," by Murray; "Stray Earth Currents"; "Connate Water in Oil Sands"; "Origin of Petroleum," by E. Berl.

Proration

[*Continued from page 12*]

County, was granted last week by the Kansas Corporation. The hearing was set for September 10.

Wants Fitts change

Shifting of proration in the Fitts pool from a well basis to a lease basis will be considered September 21 on petition of E. H. Moore, Inc., leading producer of the pool. The petition was filed following a conference of Fitts producers August 27, when a majority of producers voted in favor of the change.

The reason for the change is given as the desirability of conserving gas energy. Fitts wells have varying gas-oil ratios. The necessity of producing a determined amount of oil from each well requires removal of excessive amounts of gas from the wells of high gas-oil ratio. Saving in equipment costs through elimination of flow lines and separators is another basis for seeking the change.

Adoption of the change would eliminate the several producing formations at Fitts as separate sources of supply. The field has 818 oil wells in the following formations: Gilcrease sand 6, Cromwell sand 51, Hunton lime 311, upper Simpson series 420, Wilcox sand 50. Hunton lime, upper Simpson and Wilcox sand wells are each classed as a separate source of supply by the corporation commission.

Moore gas-oil ratio

The question of establishing a gas-oil ratio for the Moore pool of Cleveland County was taken under consideration by the Oklahoma Corporation Commission September 10 upon application of Stanolind Oil & Gas Company and Amerada Petroleum Corporation. Operators charge present methods of operation in the field are resulting in waste, and would establish a method whereby reservoir energy could be conserved.

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Outlook Bright

TRINIDAD WILL DRILL MORE AND PRODUCE MORE IN 1937

By VICTOR BRYAN

DESPITE a complete shut down of the industry which obtained for over a fortnight, the figures covering the first six months operations of the petroleum industry in 1937 in Trinidad reveal achievements which surpass the record for the last six months of 1936, which year was in itself a record one. This two weeks shut down period was occasioned by a general oil field strike started by natives on June 19, leaving a toll of about 13 killed and 43 wounded.

This instance was the first in history of a general strike in the Trinidad oil fields.

Started in Fyzabad

The whole thing came to a head in the Fyzbad area when the workers started a "sit-down" strike on the field. This strike fever quickly spread to the various oil fields and by the evening of the same day more than half of the workers had gone on strike, and a riot had started in the little oil field village of Fyzabad when the police attempted to arrest a man for allegedly seditious and inflamatory speech propaganda.

This initial occurrence resulted the same night in the shooting of a police inspector, the burning to death of a native constabulary detective in a backyard, and the shooting of a civilian. News of this tragedy precipitated a general disturbance over the island, and what had started as a "sit-down" strike on the oil fields had by June 21 taken the form of a bloody riot of island-wide proportions and which in some places resulted in firearm clashes between police and civilians. The government, however, soon had two men-of-war on the scene and the combined force of marines, constabulary and volunteers from the civilian population soon had the situation under control.

Little Sabotage

With the exception of a few minor instances connected with the firing of certain small tanks and the running to waste of some oil, there was no case of sabotage accomplished. The industry, however, suffered quite an appreciable financial set-back on account of the strike, quite apart from the postponement of the winning of a large volume of production, the loss of considerable drilling time, and sundry damage that may have been done to oil wells on account of the shut-in period.

Conditions were, however, about as close to normal again as was possible by early July, and the wheels of the industry are now (August 28) humming fairly normally again at a rate which should by the end of the year show results compensating to some appreciable extent for the strike-lost period.

The Future

Prospects for the future are bigger and better for the petroleum industry in Trinidad than perhaps they have been for the past 10 years, and with the ever present war scares in Europe, Trinidad looms up greater every day in the limelight as the greatest source of British Empire oil production.

Exploitation of present proven holdings is going on apace, the present rate of drilling indicating that the end of 1937 should reveal a year's record which will again continue the sequence of breaking the previous year's record. This is very significant when it is recalled that for the past several years after the "period of depression" the industry has broken in each succeeding year the records achieved in the previous year in the matter of footage drilled, new production gained, and total amount of oil won.

Much of the future will depend however, on the the speed and success of the exploratory work which is under way and the accomplishment of the extensive programs planned for the development of outside areas.

Field Developments and Prospects

One awaits with much interest the advent of actual drilling on the holdings of Trinidad Northern areas which, it is possible, may perhaps prove up a new field towards the northern part of the island which might have the potentialities of the big fields of the south. In this way a much needed reserve may be provided for the Fyzabad structure, which has been regularly supplying more than 50 percent of the yearly total production of the colony.

The actual commencement of marine drilling operations in the Gulf of Paria is also yet only conjectural. The granting of concessions over the 390,000 acres of marine strip that has been applied for by various companies has not so far been made by the government. It has only been heard vaguely that the allocations might be influenced by the ownership of operating oil concerns on the corresponding shore line.

Much Leasing

Some considerable portion of the probable oil lands of the island has been examined by geophysical methods —seismograph and electrical resistivity processes—and there are some surveys of this nature actually in progress at the present time. The information gained from this means of examination should tend towards much more rapid and accurate development of exploration areas in the future.

There has been such a race in the matter of leasing probable oil lands that one begins to visualize a time when the operating companies should either have to pool more of their holdings in outside areas into joint accounts or else face the expensive proposition of developing several speculative fields in widely separated areas. However, the amount of cooperation which is being strived at between the various companies should make this aspect of the situation less complicated as time goes on.

Building Pipe Line

The inauguaration of a pipe line several miles long to connect the United British's Penal field to its Point Fortin refinery should, it is believed, be seen in the near future. The fact that this pipe line project is under way, coupled with the uninterrupted progress of drilling and general expansion on this new field, indicates that the company must have or expect some appreciable production from the several completed wells now standing closed in on its lease.

It is also understood that a certain amount of production has been obtained from exploratory drilling by one company at Cedros and the time when the Cedros and Penal fields will declare themselves as commercial factors in the island's oil industry should, to all appearances, not be far distant.

The old Guayaguayare and Siparia fields are now contributing a more substantial percentage of the island's pro-

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duction than has been the case for several years past. New drilling is again taking place around Barrackpore, and some geophysical work has been reported in the Guayaguayare area. A test well on the Mayaro coast is still reported to be under way.

Trinidad Leaseholds, Limited, has a program of construction in its refinery which, when completed, should make this plant about the largest of its kind in the West Indies.

Field Statistics

The following table has been prepared to show a first hand comparison between the last six months of the year 1936 and the first six months of 1937 now under review:

	Last Half 1936	First Half 1937
Amount of footage drilled	326,490	420,133
Number of wells completed	80	114
Total amount of production (bbls.)	6,921,996	7,289,421
Number of companies in operation at end of 1936, 17; at end of June, 1937, 19.		

The above speaks for itself with regard to the pace at which the industry is moving. These figures would have been considerably better if the two-weeks shut-down period had not intervened.

Conclusion

If the second half of 1937 shows results as good as those of the first half (and indications are that these will be as good if not better) the comparative picture of production won and corresponding footage drilled over the past four years will be as in the table below:

Production of crude oil for July, 1937, was 1,377,547 barrels, while December, 1936, was cited as an "all time" high for the industry in the review of 1936 operations, with a production of only 1,231,365 barrels. Here again it must be pointed out that the 1937 figure would have been considerably better but for the fact that most fields were not producing to capacity on account of the conditions set up by the shut-in strike time period.

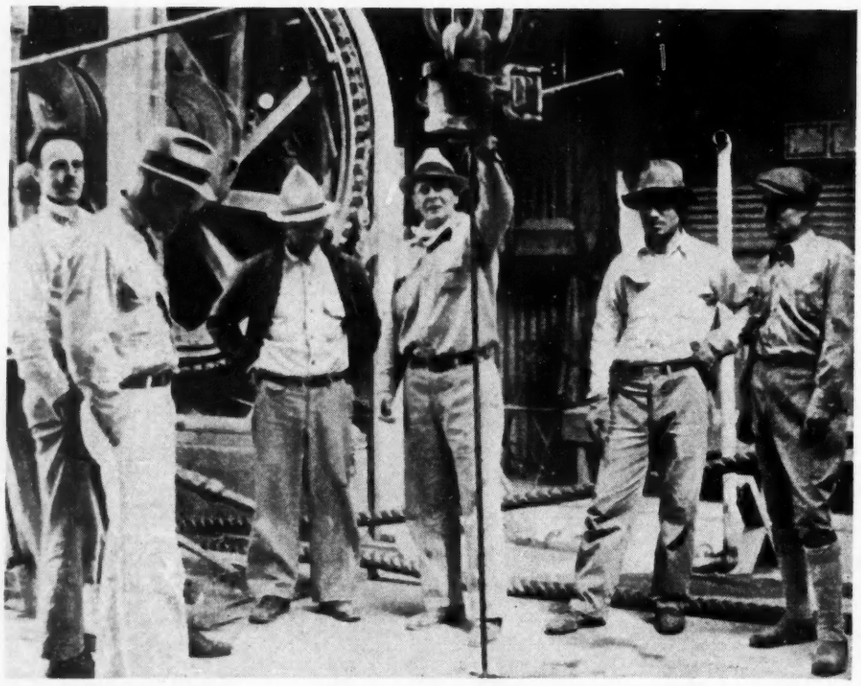
While the above figures make a very nice show for the forecast results of 1937 operations in Trinidad, it must not be forgotten that it is prices obtained for products which will be of the most material significance in determining the position of the balance sheet of operators at the end of the year.

Trinidad production yield per acre is still to be considered comparatively low, and it is to be hoped that some appreciable upward trend will take place in the world markets where Trinidad now competes for the disposal of the greater portion of her petroleum. The automotive trade in the island is advancing by leaps and bounds with a corresponding fillip in local market demands. A betterment of world prices and some preferential treatment for Trinidad oil in Great Britain (about which incidentally nothing has been heard for some time) would give the petroleum industry of the island the right push on to the achievement of the status of independence at which it has been striving so commendably during the last few years.

TRINIDAD

	1934	1935	1936	1937[1]
Production of crude oil (in barrels)..	10,894,363	11,671,224	13,237,030	15,500,000
Footage drilled	351,783	436,299	594,534	860,000

[1]Figures for 1937 based on results of 6 months operation and estimated conservatively for the half year period now in progress.



Part of the crew of the Turkish government's Harmis wildcat near Mardin. Left to right: V. P. Yocom, driller; John Shirley, driller; Kid Russell, drilling superintendent; Morgan Terry, driller; Zerkeriya Kantar, tool dresser, and Hamdi, tool dresser. The first four are Americans.

Plan Three Tests

MOOSE DOME ACTIVITY ASSURED; FIVE TURNER VALLEY WELLS DUE

Three tests on Moose Dome structure, 40 miles west of Calgary, Alberta, Canada, were assured last week as Moose Oils No. 2, which attained production approximating 100 barrels daily at 1553 feet several weeks ago and proved the structure, was being given acid treatment. Moose Oils will drill No. 3 east of No. 2, and Model Oils will drill two tests, one east and the other west of Moose Oils No. 2.

Pending result of the acid treatment of No. 2, Moose Oils officials are withholding information on completion plans. It was originally planned to carry the well to 3100 feet, and the strike at its present depth in the Devonian limestone was unexpected. The wildcat is attracting widespread attention in Montana, where it is taken to indicate the possibility that a great area may be underlain with Devonian production throughout the North Rocky Mountain region.

Dozen Below 6000 Feet

A dozen Turner Valley wells were drilling below 6000 feet as the week closed, insuring a large number of completions during the next few weeks. Of the 12, five were in the Madison limestone. They are: Davies Petroleums' No. 2, Legal Subdivision 13, Section 21, Township 18, 2-w5, drilling 396 feet in lime encountered at 6496 feet; Mercury Oils No. 8, Legal Subdivision 3, Section 4, Township 19, 2-w5, encountered lime at 5516 feet and was drilling at 5651 feet; Brown Oil Corporation's No. 1, Legal Subdivision 14, Section 16, Township 18, 2-w5, drilling at 6345 feet after encountering lime at 6344 feet; Brown Oil Corporation's No. 2, Legal Subdivision 8, Section 20, Township 18, 2-w5, encountered the lime at 6533 feet; Granville Oils, Legal Subdivision 16, Section 29, Township 18, 2-w5, encountered the lime at 6827 feet.

Royalite Oil Company, one of the principal producing companies in Turner Val-

ley, will undertake completion of Stockman Oils' Turner Basin 2, which has been standing at 4040 feet since work was suspended in 1930. Location of the well is Legal Subdivision 7, Section 27, Section 20-3-w5, on the west side of the north end of Turner Valley.

Wildcat South of Turner Valley

Maynard J. Davies, president of Davies Petroleums, Ltd., announced plans for formation of a subsidiary company to make a wildcat test far south of the crude oil area of Turner Valley. Approximately 3000 acres have been blocked.

Completion of Battleview Oils' wildcat on Wainwright structure has been delayed awaiting inspection of the cementing job by government officials. It is bottomed at 1894 feet, where it shows oil.

Taber McMahon Oils, Ltd., announced its entry into the Taber area just north of the international boundary in Southern Alberta. It has 760 acres under lease. Location of the first test is in the southeast quarter of Section 3, Township 9, 17-w4, on Barnwell anticline. The acreage is said to be high on the structure. Officials of the company are Mart McMahon, president; William E. Everson, vice president; C. R. Luchia, secretary-treasurer, and H. Berlin and N. V. White, directors.

Reports from other West Canadian structures follow: On Birch Ridge, Elbow Oils Company, drilling at 5198 feet; on Calling Valley, Anglo-Indian Oils Corporation, building derrick; Sentinel Oils, resuming at 5850 feet; on Cardston, Franco Oils, cleaning at 4580 feet; on Clearwater, Western Development Company, drilling at 142 feet; on Coutts, Home Oil Company's Coutts 1, drilling at 2160 feet; on Duncan, Spindletop Oils, casing at 1600 feet; on High River-Aldersyde, Ranchmen's Gas & Oil Company, waiting at 7225 feet; on Highwood-Sinclair, Green Valley Petroleum's Banner, drilling at 3141 feet; South End Petroleums, drilling at 5500 feet; on Hunter Valley, Hunter Valley Oil Company, drilling at 8189 feet; on Kootenay Dome, Roxana Petroleums, drilling at 3227 feet; on Lethbridge, Lethbridge Petroleums, set casing at 2305 feet; on New Valley, New Valley Oil Company, fishing at 8462 feet; on Pincher Creek, Weymarn Petroleum's No. 2, getting acid treatment at 6432 feet; on Ribstone, Dina Oil & Refining Company's No. 4, drilling at 1023 feet; London Ribstone Petroleums, testing; on Steveville, Anaconda Oil Company, drilling at 615 feet; on Taber, Plains Petroleum Corporation's No. 2, drilling at 2432 feet; No. 3, drilling at 2641 feet; on Wainwright, Altoba Oils, building derrick; on Watson, Mar-Jon-Maxmont Syndicate, drilling; Mar Jon Oil Company's No. 3, changing from cable tools to rotary equipment at 5520 feet.

REGISTER WORKERS

Alberta is gathering data to alter labor regulations

Registration of all workers in the Turner Valley field of Southern Alberta, Canada, is being undertaken by provincial government authorities so that data may be had on which to modify or add to regulations established for protection of employes and the industry, according to Hon. E. C. Manning, minister of trade and industry.

A commission named by the government some months ago to investigate working conditions in the oil and gas industry recommended the registration, which is also intended to provide oil well operators with a complete record of the various types of skilled workers available in the field.

As a result of the commission's investigation, a 48-hour, 6-day week was established in the field several weeks ago. It has also been suggested that the industry be placed under the Tradesmen's Qualification Act, with those engaged in it properly certificated in the various branches of the work, Mr. Manning said.

A check to determine whether the Hours of Work Act is being observed will be made by officers engaged in registration of workers.

COLOMBIA LEASING

Shell takes four blocks in State of Magdalena

Air mail communication received September 9 from Barranquilla, Colombia, indicates Compania de Petroleo "Shell" de Colombia is persuing a policy of accumulating substantial holdings for exploratory drilling there.

Recent leasing activities of the organization include the taking of 50,000 hectares (one hectare equals 2.47 acres) in the Department of Magdalena from Carlos Daniel Roca and others on a 50-year lease. Annual rentals are $1.99 per hectare, U. S. currency, payable in advance.

Shell of Colombia also has taken a smaller block from Domingo Jacome and others on a 50-year lease, paying annual rental of $5000. This block is in the Department of Magdalena, too.

Another 50-year lease, recorded August 27, as were the above, was that taken by Shell of Colombia from Ujueta Brothers in the Department of Magdalena. It calls for an annual advance rental of $20,000, U. S. currency.

Sixto A. Carvajalino leased August 27 to Shell of Colombia several blocks in the Department of Magdalena for 50 years, the contract calling for annual advance rentals aggregating $25,000 U. S. currency per year.

EAGLE LOSES FIGHT

In Supreme Court for leases in Las Choapas

Ownership of Mexican subsoil is not enjoyed by holders of oil concessions, for these rights apply only to exploitation of subsoil products, the federal supreme court of Mexico ruled recently in interpreting the 1917 national constitution in rejecting a suit the Mexican Eagle Oil Company (Royal Dutch Shell group) brought against the ministry of national economy. The company contended that the ministry had erred in depriving it of rights to Lots 1, 2, 3 and 4 of the Las Choapas fields, Tabasco State, franchises that it obtained in 1909 from the Real Estate Company of Mexico.

The Eagle argued that as the concessions granted it ownership of the property, the transfer being made 8 years prior to enactment of the new constitution, the ministry had illegally canceled the rights and given the property to the then existing Petromex, the now defunct semi-official oil company. The ministry's action, taken last December, was on the ground that the Eagle had failed to work the property as is demanded by the petroleum laws. The court held that the ministry had acted legally, as the concessions apply only to subsoil operations but not to subsoil ownership. The constitution stipulates that subsoil is national property, the tribunal ruled.

The supreme court refused the New England Fuel Oil Company an injunction against cancellation by the ministry of national economy of its concession to oil lands in the Alamos zone, Panuco municipality, Vera Cruz State, because the company failed to make agreements with farmers working common public lands affected by the franchise in the 90-day term the ministry stipulated. The company argued that the presidential decree demanding that oil concessionnaires must make agreements with common public lands farmers regarding royalties, etc., is unconstitutional. The court held that the decree is in accord with the oil laws.

MEXICAN TAXES

Only federal government has right to make levy

The federal government of Mexico has the exclusive right to levy taxes on the petroleum industry, the national supreme court ruled in holding unconstitutional the law enacted by Vera Cruz state which provides a tax of 15 percent on oil leases, royalties, transfers of exploration and exploitation rights, and the like.

MEXICO INVESTMENT

Says 69,500,000 pesos is total in local industry

Examination of oil company books by the Mexican government revealed, according to the government's statement, that these companies have invested approximately 69,500,000 pesos (about $20,000,000 U. S. currency) in the industry in Mexico. The examination was made because of the differences between the amount the oil companies claimed they had invested in Mexico and the amount the workers claimed the companies had invested.

Of the above total, Mexican Eagle (Compania Mexicana de Petroleo, El Aguila, S. A.) accounts for 32,000,000 pesos, and Huasteca Petroleum Company, a subsidiary of Standard Oil Company of New Jersey, accounts for 19,000,000 pesos.

FINANCIAL AID

General Administration of National Petroleum, successor to the Mexican government's defunct Petromex, recently was granted 3,902,000 pesos by the government for purchase of drilling and refinery equipment.

OKLAHOMA FIELDS

Wilcox sand zone in Billings field is extended.

* * *

New Creek County field producing from Wilcox.

Oklahoma City.—Extension of the Wilcox sand zone of the Billings pool of Noble County was highlight of the Oklahoma City district last week. Meanwhile, developments at Carter Oil Company's test to the north in Grant County made it apparent the well may yet be completed as a good producer, despite trouble with water encroachment.

Tide Water Associated Oil Company's Falke 1, NE NW NE 28-23s-2w, extended the Billings pool a quarter-mile southeast, when, after drilling plugs, it went ahead to 4339 feet and came in to make 240 barrels of oil per hour from the Wilcox sand. Tubing was being run for a potential test.

Two other tests were being started immediately, both by Tide Water Associated Oil Company. Its Falke 2, NWc NE 28-23n-2w, was moving in rig as was Derr 1, SEc NW 16-23n-2w.

Two producers were completed in the pool. Continental Oil Company's Conway 1-A, SE NE SW 16-23n-2w, flowed 50 barrels of oil per hour for 17 hours, while drilling between 4260 and 4279 feet in the Wilcox sand, and Phillips Petroleum Company and Shell Petroleum Corporation's O'Neil 5, NW SW SE 16-23n-2w, made a potential of 1768 barrels of oil through tubing in 24 hours from 4264 feet.

Carter Oil Company et al's Crisman 1, CW/2 SW NW 16-25n-3w, southeast of Lamont in Grant County, was looking decidedly better. September 6 the well flowed 334 barrels of oil and 257 barrels of water and the following day made 580 barrels of oil and 360 barrels of water, the flows coming by heads every 2½ to 3 hours. Operators were of the opinion the water was coming from dolomite and ran tubing with packer set below the pipe. During a 21-hour test later in the week, the well made 542 barrels of oil and 285 barrels of water. The steady decrease in water volume indicates the fluid is coming from dolomite instead of Wilcox. It is at 5408 feet with pipe set at 5397 feet.

A well which is believed to have found the southwest limit of production in the Lucien pool of Logan County last week was Mid-Continent Petroleum Corporation's Bulling 2, SE NE NE 5-19n-2w, which had water in the second Wilcox sand at 5106 feet. Hopes of production came earlier in the week when the test drilled plugs, bailed dry and showed a scum of oil and a very small show of gas and no water. Water later came into the hole and it is to be plugged back 2½ feet and given a shot. Bulling 3, NW NE NE 5-19n-2w, topped the Checkerboard lime at 4457 feet; topped the Oswego lime at 4620 feet and was circulating at a total depth of 4945 feet.

Amerada Petroleum Corporation and Stanolind Oil & Gas Company's Knight 1, SWc 12-17n-1w, in the Langston area of Logan County, was preparing to run tubing with the hole at 5066 feet in the Wilcox sand. Top of the formation was had at 5059 feet, and after drilling in under pressure, the well was opened and flowed 221 barrels of oil, 180 barrels of which was oil load. Gas was estimated at 1,000,000 cubic feet.

A new producer for the Moore pool of Cleveland County was Sinclair Prairie Oil Company's Holmes 2, SE NE SE 28-10n-2w, at the south end of the field. It had the Wilcox sand at 7263 feet, drilled to 7285 feet and made 1568 barrels of oil in 5 hours.

Sunray completes third well in revived Doyle field

Ardmore.—In Stephens County, in the recently revived Doyle pool, Sunray Oil Company was completing another oil well, the third for the district. It was Hefner 1, SEc NW 12-1n-5w, a west offset to Helmerich & Payne's Graham 1, initial producer. The new well was estimated good for 250 to 300 barrels of oil. Production is from 3816 feet in the Hoxbar sand, a member of the Deese series.

Two other Doyle tests there were waiting on cement, The Texas Company's Graham 1, SEc SW 12-1n-5w, and Helmerich & Payne Inc.'s Hefner 1, NEc SW 12-1n-5w.

An extension of Sayer pool of Beckham County was reported. Consolidated Gas Utilities Company's Kingsley 1, C NE SW 10-9n-23w, drilled to 3529 feet in Dolomite and made 78,000,000 cubic feet of gas. The largest in the area, Kingsley, extends production ¾ mile southwest.

In the Fox area of Carter County, Carter Oil Company was building rig for Carter-Harley 1, C NW NW 19-2s-3w, an east offset to Carter Oil Company et al's Harley Community 1, Oolitic lime discovery well there.

H. R. Hollenback, Fain Drilling Company et al's Ward 1, SW SE NE 30-7n-1e, east of Lexington in Cleveland County, found the first Wilcox sand white and salty at 6800 to 6805 feet. A second core between 6916 and 6921 feet, in the second Wilcox, was also salty. After drilling to 6932 feet another core was to be taken. The test is 20 miles southeast of Moore pool.

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Jackson opens Wilcox sand field for Creek County

Tulsa.—Passing up a good show of oil in the Simpson dolomite at 2915 feet, L. B. Jackson et al's Albert 1, NEc NW 25-18s-9e, southeast of the Mannford district in Creek County, found good production to open a new Wilcox sand pool for the area last week. Before being shut in for storage, the well made 150 barrels of oil during a 9½-hour test at 2975 feet. It is estimated good for 300 barrels of oil daily.

Albert 1 went into the Simpson dolomite at 2915 feet and had about 900 feet of oil in the hole. Drilling ahead, it topped the Wilcox sand at 2972 feet, and at 2975 feet the flow started.

In Seminole County, Stanolind Oil & Gas Company, Amerada Petroleum Corporation et al's Salina 1, SE NE NW 4-5n-6e, south of the Konawa pool, swabbed and bailed 15 barrels of oil and 53 barrels of water in 24 hours from 3317 feet. It will plug back. Salina 1 went into the Hunton lime at 2990 feet and had a spotted show of oil from 3019 to 3024 feet. Top of the Sylvan was at 3040 feet; Viola at 3170 feet, and Simpson dense at 3220 feet. It went into the Dolomite at 3284 feet for a small show of oil and gas.

Unexpected gusher production had from the Dutcher sand between 765 and 777 feet at T. M. McGilless et al's Big Lake Club 1, SEc 23-20n-15e, Rogers County, two weeks ago, is to receive further testing as location for a second well has been made across the Verdigris River from the new producer. When Big Lake Club 1 first came in, it was estimated making 400 barrels of oil daily, but later was reported good for about 350 barrels a day. Gas was gauged at from 3,000,000 to 5,000,000 cubic feet. Associated with McGilless in the venture were Dan C. Nufer and Glen S. Dille, both at Tulsa.

The well was a near-failure when operators were considering abandoning the test after finding the Bartlesville sand dry. The tools dropped into soft sand below the Bartlesville, however,

Plan now to attend the

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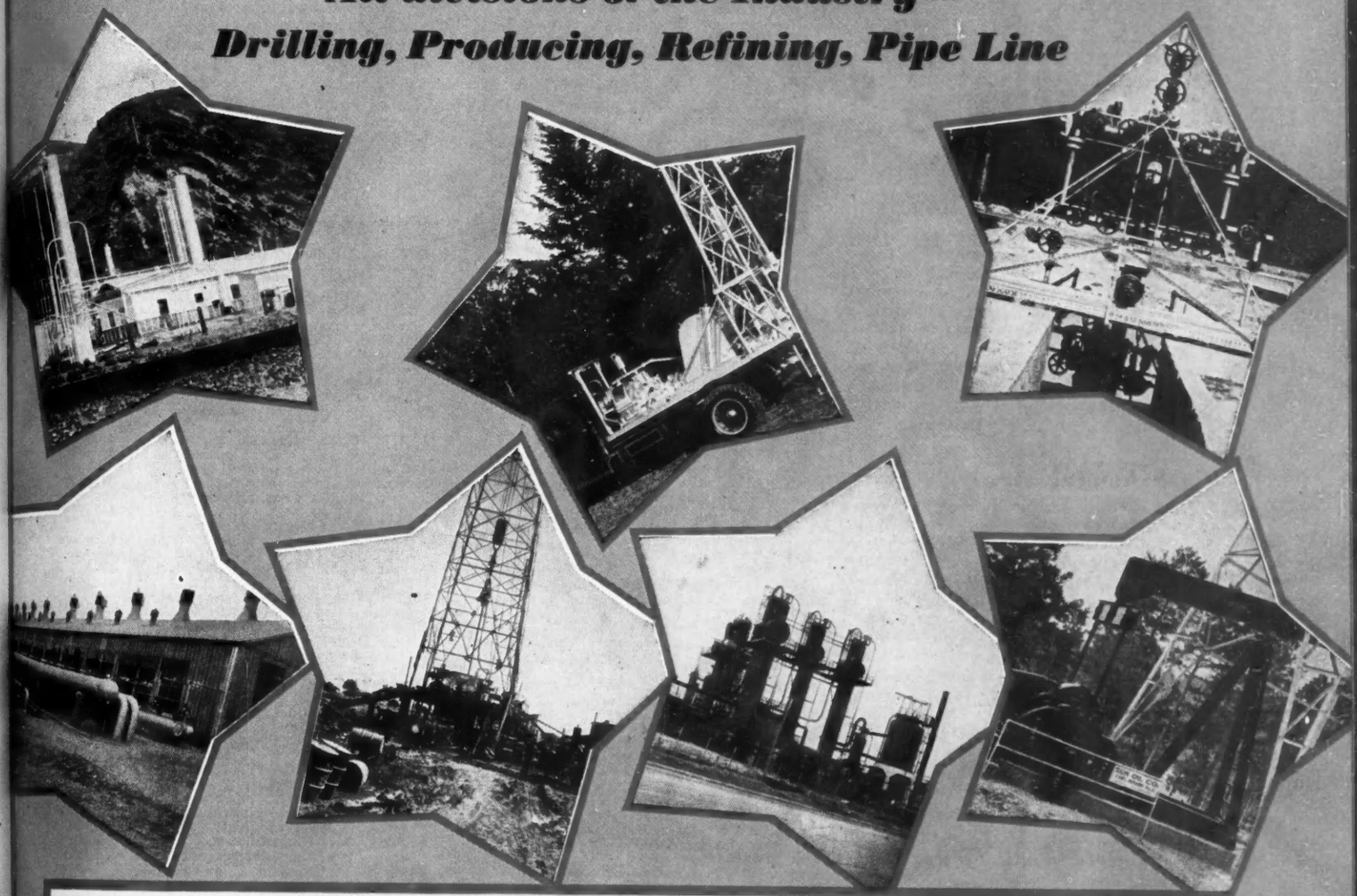

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA MEMBERS PLEASE NOTICE . . . The Annual Meeting will be held in Houston, Texas, October 14, 15 and 16 during the Oil-World Exposition, October 11 to 16. Please send now for your registration blanks, to: Independent Petroleum Association of America, Thompson Building, Tulsa, Oklahoma.

For Full Details Regarding Exposition Space, Etc. Write: ED. LENZNER, General Manager
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and after showing for gas, which steadily increased, began spraying oil. The head flows followed, oil going over the top of the mast. It was then directed into pits, and later shut in until tanks could be erected and 6-inch casing run. Pipe line conections were being arranged for.

Kerlyn Oil Company's Pratt 1, wildcat in SW SE NE 6-4n-4e, southwest of Maxwell in northwestern Pontotoc County, found top of the Wilcox sand at 2290 feet and will be tested at 2355 feet. Nearest production is in the Beebe pool to the east, where the principal producing horizons are Hunton lime and Viola lime. Hunton lime at Beebe is found at an average depth of 2215 feet, while the Viola is usually found at around 2425 feet. In comparison, top of the Wilcox sand at Fitts field is found at an average depth of 4400 feet. It is slightly lower at Jesse, to the southeast.

Extensive testing of pay levels in southern Pottawatomie County is being planned by Roy S. Nash at Miller 1, C N½ NE SE 29-6n-3e, in the Asher-Wanette area. Casing will be perforated on a level with four formations in the well if necessary. Simpson dolomite, Viola and Hunton limes and the Wanette sand are all present.

Tulsa Engineers Meeting

Tulsa.—Fall season of the Engineers Club of Tulsa will be opened September 13 with a dinner meeting at the Tulsa Club. Speaker of the evening will be R. Roe Bartle, regional director, Boy Scouts of America, from Kansas City, Missouri. He will tell of a recent trip to Nice, France, where he was principal speaker at the international meeting of the Rotary Clubs of the World.

Work holding steady

Tulsa.—Completions and wells started in Oklahoma continued to run about even for the past week, with completions leading 47 to 46. Of the producers, 30 were oil wells capable of producing 15,515 barrels initial, and 3 were gas wells with a total open flow of 92,500,000 cubic feet of gas. Fourteen failures were counted by Oklahoma operators. Scouts made 8 reports from Seminole County, 7 from Carter, 5 from Creek, 4 each from Osage, Pontotoc and Stephens, 3 each from Lincoln and Okmulgee, 2 from Pottawatomie, and 1 each from Cleveland, Coal, Garvin, Jefferson, Pawnee and Payne counties.

Kansas field work gains

Wichita.—New starts far exceeded completions in Kansas for the week just closed by the score of 78 to 54. Thirty-eight of the completions were oil producers with an initial production of 48,966 barrels. Five gas wells were tested for a total open flow of 17,250,000 cubic feet, and 11 were failures. Russell County, with 16 locations, led the state, with Barton County next with 12 starts. Others in order were Ellis 9, Rice 8, Chautauqua 7, Reno and Stafford 4, Harvey 3, Cowley, Ellsworth and Trego 2 each, and Barber, Elk, Gray, Greenwood, Marion, McPherson, Pratt, Scott and Sumner counties 1 each.

OKLAHOMA

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BECKHAM COUNTY—		
Consolidated Gas Co., Kricely 1, cen ne sw 10-9n-25w	¶78	3529
CARTER COUNTY—		
Shell, Keck 19, nw ne ne 5-4s-3w (pb 1095) (otd 1060)	*	1166
Rockland Oil Company, Sarasota 27, ne nw ne 23-4s-3w (otd 1206)	6	1335
Cox & Hamon, Jackson 10, se se nw 15-4s-2w	12	2547
Roy Kyle et al, Daugherty 3, sw se sw 17-4s-2w (pb 1555)	19	1600
CREEK COUNTY—		
Bruin Oil Co., Morton 1A, se se nw 27-14n-10e	16	3330
Kirchner et al, Harjo 1, se ne se 27-14n-10e	85	2678
Wood Oil Co., K. Washington 2, cse ne 7-17n-7e	20	2403
Doak & Hughes, White 1A, cne sw 24-17n-7e	*	2530
Texas & Pacific, W. C. McIntosh 1, ne ne ne 21-17n-9e	¶3.5	1355
Hayden & Hayden, L. Washington 1, sw sw nw 13-19n-9e (pb 1320)	*	1370
HUGHES COUNTY—		
Texas, Ed Cox 1, nw nw nw 23-9n-8e (pb 4071)	*	4396
JEFFERSON COUNTY—		
Long, Yingling & Laucke, Seay 24, sw sw se 3-7s-5w	25	1095
KIOWA COUNTY—		
Fields & Nagle, H. Octer 1A, nw se nw 27-7n-17w	2	652
LEFLORE COUNTY—		
LeFlore O&G, Orr 22, ne nw sw 6-6n-23e	¶11	2185
LINCOLN COUNTY—		
Sun Oil Co., Cook 5, ne nw sw 1-14n-3e	120	4287
Deep Rock Oil Corp., Eakers 1, nw sw sw 35-15n-2e	1602	5090
R. L. Kemp et al, Lindley 1, ne se ne 20-17n-5e	70	4060
LOGAN COUNTY—		
Shell Pet. Co., Waddle 1, sw se nw 36-15n-4w	*	6791
Stanolind & Amerada, Pfeiffer 8, se sw sw 33-30n-2w	4408	5055
NOBLE COUNTY—		
Continental Oil Co., Conway 7, ne sw nw 21-23n-2w	4413	4305
OKFUSKEE COUNTY—		
Lease Inv., Day 1, se ne sw 3-13n-10e	*	3440
OKLAHOMA COUNTY—		
Olson Oil & Ritz, Crawford 1, ne ne sw 15-12n-3w	299	6480
OSAGE COUNTY—		
Peters & Sinclair, Prairie 18, nw nw ne 24-24n-7e	40	781
Lewis Prod. Co., 6, sw nw ne 33-24n-7e	173	2622
PONTOTOC COUNTY—		
Mid-Continent, Statler 7, nw nw sw 2-1n-7e	477	4100
Roodhouse, Booth 1, se nw se 20-2n-6w	89	4397
Burk Greis, Colbert 3, ne se nw 36-2n-6e	806	3756
Magnolia, Metro Life 33, ne nw sw 27-2n-7e	1	2540
Metro Life 34, se nw ne 27-2n-7e	19	2610
Wooley 8, ne ne ne 28-2n-7e	31	2615
Moore, Wirrick 6A, ne ne sw 29-2n-7e	1928	3595
Smith Lee O&G, G. Wade 4, sw sw ne 3-4n-7e	*	1175
Mary F. Oil Co., Patterson 2, se se sw 20-5n-8e	*	2517
POTTAWATOMIE COUNTY—		
British American, Ramsey 1, se se ne 27-6n-4e (pb 3609)	*	3819
Atlantic et al, Honaker 1, nw ne ne 6-10n-5e	*	4917
Atlantic, Dooley 1, se se sw 9-11n-5e (pb 4732)	*	4919
Lynch, Burton 1, ne ne nw 24-5n-5e	148	2494
SEMINOLE COUNTY—		
Kilbourne, Factor 1, nw sw se 25-5n-7e (otd 1108)	70	2282
Grisso et al, Orwig 2, sw se se 15-6n-6e (pb 1980)	*	2400
Smith, W. E. Huddleston 1, ne se nw 32-7n-6e (pb 2979)	20	2990
Lanahan et al, Fish 1A, ne sw ne 19-7n-8e	99	3100
Shell, Hopper 3, ne se ne 19-9n-6e.	55	4215
Amerada et al, Riddle 3, ne nw ne 2-10n-5e	147	4619
Atlantic, Decker 1, sw sw sw 32-11n-6e	*	4690
Texas, E. M. Wright 2, ne ne ne 32-7n-6e	315	2939

*Failures; †Junked; ¶Million cu. ft. gas.

128 geologists make tour of Oklahoma and Kansas

Wichita.—Members and guests of the Kansas Geological Society September 6 ended a two-state geological tour. Directed by R. C. Moore, director of the Kansas Geological Survey, the 128 geologists who made the tour started at Pittsburg, Kansas, September 2. Features studied included the Chautauqua arch in southeastern Kansas and that portion of the structure which extends into northeastern Oklahoma. Robert H. Dott, director of the Oklahoma Geological Survey at Norman, and Joseph L. Borden, Pure Oil Company, Tulsa, conducted the group over the Oklahoma area.

To open Indian lease bids

Anadarko, Okla.—Sealed bids for oil and gas leases on 66 tracts of restricted, allotted Indian lands will be opened at the Anadarko Indian agency on September 14 at 10 a.m. A total of 8,342.49 acres is included in the sale.

KANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BARTON COUNTY—		
Phillips, Bitters 1, ne ne ne 6-16s-13w	16	3352
McClanahan 1, ne ne se 7-16s-13w	1781	3377
Stanolind, Redetske 1, sw sw se 26-16s-13w	1652	3409
Rieman 3, sw nw nw 34-16s-13w	1495	3370
I. T. I. O., Hoffman 1, ne ne ne 1-16s-14w	1872	3307
Darby, Burmiester 1, sw sw se 3-17s-11w	1817	3298
I. T. I. O., Sessler 2, ne sw sw 24-20s-11w	3213	3254
Bryant 3, sw nw nw 25-20s-11w	1557	3279
Bryant 4, se sw nw 25-20s-11w	1418	3305
Texas, Schmidt 6, se nw nw 36-19s-11w	2203	3293
BUTLER COUNTY—		
Saco, Cotton 1, sw sw se 16-28s-6e	*	3141
CHAUTAUQUA COUNTY—		
Barbara, Gorham 3, ne se nw 23-32s-10e	150	1909
Wallis et al, Shouse 2, ne se nw 2-32s-12e	5	610
C. R. Ross et al, Walker 1, nw nw se 5-33s-11e	*	2346
Denman Bros.-Union Gas Co., Banghman-Fee 2, se ne sw 1-33s-12e	¶1	1730
Sinclair Prairie, Townsend 3, nw nw se 20-34s-9e	8	1775
Mitchell & Stewart, Spurlock 1, se se ne 35-34s-11e	10	1100
D. L. Williams, Whistler 3, sw se se 3-34s-13e	*	710
COWLEY COUNTY—		
Mead Prod. Co., Archer 1, nw nw ne 24-30s-5e	3	2864
Lloyd, Frost & Study, Wilson 4, se se sw 33-31s-3e	3103	3221
National Ref. Co., Schwantes 1, nw sw ne 16-32s-3e	*	3431
Deep Rock, Cranston 1, nw nw ne 30-32s-6e	500	2229
ELLIS COUNTY—		
Republic Nat. Gas, Romine 3, sw nw ne 18-11s-16w	2889	3287
Ryan Consolidated, Bemis "A" se se nw 22-11s-17w	2632	3439
Deep Rock, Baumer 14, ne sw nw 27-11s-17w	3168	3545
Margay, Bemis "D", nw nw se 28-11s-17w	1046	3429
Wentz, Bemis 5, sw se nw 28-11s-17w	2822	3431
Wolf Creek, Bemis "A" 2, se se nw 4-12s-17w	*	3720
Texas, F. A. Bemis "A", sw sw ne 28-11s-17w	2047	3410
ELLSWORTH COUNTY—		
Continental, Rolfs 4, ne se nw 34-17s-8w	1418	3235
ELK COUNTY—		
Diller O&G, Key "B" 8, se nw nw 25-31s-10e	2	1660

KANSAS FIELDS

Wildcat near Victoria looms as next field opener.

* * *

Pool discovered by test in north Stafford County.

* * *

Kowalsky and Silica pools extended by one well.

Wichita. — The next Kansas pool probably will be opened by Buffalo Oil Company's Phillips 1, NEc 18-14s-16w, one mile southeast of Victoria near the eastern edge of Ellis County. Top of the Siliceous lime was found at 3433 feet. A core from 3435 to 3446 feet yielded 8½ feet of saturated lime. The test previously had found the conglomerate devoid of oil or gas at 3422 feet.

New Stafford County Pool

Stafford County was again the center of attention as it reported another pool in the northern part. Newman and Winemiller's Sittner 1, NEc 33-21s-12w, five miles southeast of the Gates pool, had a small show of oil from 3309 to 3314 feet and when cored from 3405 to 3448 feet, recovered a 6-foot core with fair saturation. After setting seven-inch casing at 3360 feet, the plug was drilled and the hole filled 500 feet with oil in five hours. After being acidized with 1000 gallons, the well was tested and established a potential of 1408 barrels of oil.

Company, Well and Location	Init. Prod. Bbls.	Depth
GRANT COUNTY—		
Parrish, Patterson 1, csw¼ 25-28s-37w	¶5.5	2637
United Prod., Schwerlfeger 1, csw¼ 36-29s-35w	¶7	2743
Kansas O&G, Stevens 1, cs½ s½ s½ 13-30s-35w	¶3.25	2763
GREENWOOD COUNTY—		
H-A-L Oil Co., Wright 4, cwl ne sw 23-26s-9e	¶1	782
HARVEY COUNTY—		
Olsen et al, Warren Mortgage 1, nw nw se 50-23s-3w	830	3365
McPHERSON COUNTY—		
Shawver, Klassen "B" 1, sw ne nw 21-19s-1w (otd 2957)	335	3430
Continental et al, Graber 6, nw nw nw 32-21s-1w	617	3286
RENO COUNTY—		
Gled Oil Co., Franz "A" 2, se sw nw 2-24s-4w	146	3371
Pryor & Lockhart et al, Stackey 1, nw sw sw 31-25s-5w	*	4088
Magnolia et al, Thome 1, ne ne ne 17-26s-4w	1134	4021
RICE COUNTY—		
Sinclair Prairie, Bollton 2, se sw sw 31-18s-7w	1439	3238
Continental et al, Nickel 5, ne se sw 13-18s-8w	1073	3228
R. J. Warner 1, nw ne nw 6-19s-7w	*	3366
Sinclair, Prairie, Knop 3, nw ne nw 4-20s-10w	225	3325
Gulf, Poncin 4, nw se ne 5-20s-10w	1052	3335
RUSSELL COUNTY—		
Gulf, Ehrlick 7, ne se nw 1-14s-15w	*	3475
Skelly, Dumler 4, sw se ne 1-14s-15w (pb 2772)	*	3316
Cities Service, Crawford 16, nw nw sw 2-14s-15w	316	3291
Central Pet. Co., Furthmeyer 1, sw sw se 9-14s-15w	*	3167
W. I. Southern, Sellens Heirs 8, ne sw sw 29-15s-13w	1172	3330
Coralena, Deinis 2, ne se ne 36-15s-14w	2488	3270
Deines 5, sw se ne 36-15s-14w	1312	3323
SEDGWICK COUNTY—		
Windsor Oil Co., Smith 1, nw se ne 22-25s-1w	*	3242

*Failures; †Junked; ¶Million cu. ft. gas.

Link Well Finished

Bridgeport Machine Company and Turman Oil Company's Habiger 1, NWc 5-18s-10w, link well between the Stumps pool of Rice County and the Bloomer pool of Barton County was completed last week for a potential of 4027 barrels of oil and 12,000,000 cubic feet of gas. In the Lansing lime from 2924 to 3031 feet, the well was acidized with 5000 gallons, and during a four-hour period flowed 671.12 barrels of oil. In another four hours it flowed 800.62 barrels of oil. Work started at three other tests in the immediate area. These included Bridgeport et al's Habiger 2 and 3, east and south offsets to the new producer and Skelly Oil Company's Zink 1, SWc 32-17s-10w, direct north offset in Ellsworth County.

A new producing horizon for Weathered pool of Cowley County was uncovered last week at Earl Wakefield et al's Ira Wilson 1, NEc NW 4-32s-3e, reported making 50 barrels of oil per hour from the Kansas City lime topped at 2485 feet. It was just in the formation. Production tests are planned as soon as tankage is erected. The well is in a pool heretofore producing only from the Siliceous lime.

Extension of the Kowalsky and Silica pools of Rice and Barton Counties went on record as Stanolind Oil & Gas Company's Schmidt 1, SW SE SE 35-19s-11w, filled 600 feet with oil after the plug was drilled at 3306 feet in the Siliceous lime. The well is three-quarters of a mile west of the Silica pool and one-half mile north of the Kowalsky area. Production tests were to start at once.

Hopes Dimmed

Hopes for a good producer at Pratt County's latest wildcat strike, Atlantic Refining Company, Skelly Oil Company and Cities Service Oil Company's Runyon 1, SW NW NE 11-27s-13w, were considerably dimmed as drilling was carried below 4423 feet in Siliceous lime with 3000 feeet of fluid in the hole. Amount of the oil had not been determined. The well had previously made only three barrels of oil per hour, the oil supposedly coming from the Simpson.

A three-quarter mile east extension of the Kraft pool of Barton County was reported as Cities Service Oil Company's Hogan 1, NW NE NW 11-17s-11w, filled 700 feet with oil in 12 hours from 3361 feet in the Siliceous lime. Top of the formation was found at 3343 feet. The test was acidized with 3000 gallons. Hogan 1 is due north of Republic Natural Gas Company's Bloomer 1, recent extension well in the Kraft pool.

Extending production one-quarter mile north in the Trapp area of Russell County, W. I. Southern, Inc., completed Boomhower "A" 10, in Section 30-15s-13w, for 2647 barrels of oil at 3268 feet in the Siliceous lime.

Wildcat Produces

Two miles west of Trapp in Russell County, Shell Petroleum Corporation's Batt 1, SEc 35-15s-14w, a wildcat, drilled to 3320 feet in the Siliceous lime and was acidized with 3000 gallons. The test swabbed 300 barrels of oil in 10 hours and was later completed for 1276 barrels of oil.

Blackwell Oil & Gas Company and others completed the latest extension well for the Bemis pool of Ellis County, their Richmond 1, SEc 15-11s-17w. During a 24-hour test from the Siliceous lime at 3416 feet it made 1193 barrels of oil.

In the Oden extension of Saxman pool of Rice County, Republic Natural Gas Company completed Oden 3, CW/2 NW 5-21s-7w, for 5356 barrels of oil. Production was from the conglomerate at 3335 feet. Discovery well for the area was completed for 2551 barrels of oil.

West offset to the Oden discovery well, Darby Petroleum Company's Oden 1, NEc 6-21s-7w, was deepened to 3343 feet in the conglomerate. It had formerly attained a potential rating of 2111 barrels of oil from the old total depth of 3335 feet.

A recent extension well in the Hauschild pool, K. D. Holland et al's Brothers 1, SEc 12-21s-7w, was completed for 460 barrels of oil from the conglomerate at 3371 feet. It extended production one and one-quarter miles east.

Latest pool opened for Stafford County, Stanolind Oil & Gas Company's Hartnett 1, NWc SE 23-24s-11w, thought to be producing from the Simpson sand at 3807 feet, was rigging up to drill deeper to establish the identity of the sand. The well came in flowing 53 barrels of oil an hour for four hours. It made head flows every 30 minutes. It had filled 1000 feet with oil in 45 minutes when the plug was drilled at 3805 feet.

Fairport field of Russell County goes off proration

Wichita.—Western Kansas' first oil field to go off proration was reported by E. G. Dahlgren, director of the conservation division of the Kansas Corporation Commission. It was the Fairport pool of Russell County, which has produced nearly 12,000,000 barrels of oil since its discovery in 1923. At present, 152 wells there have a combined potential of 3651 barrels of oil.

In Sedgwick County, the Valley Center pool was thrown open to capacity production. Opened in 1928, it has produced approximately 20,000,000 barrels of oil. Present production is 1720 barrels of oil, the combined potential of 68 wells.

NORTH AND WEST TEXAS

Harper field, Ector County, becomes important area.

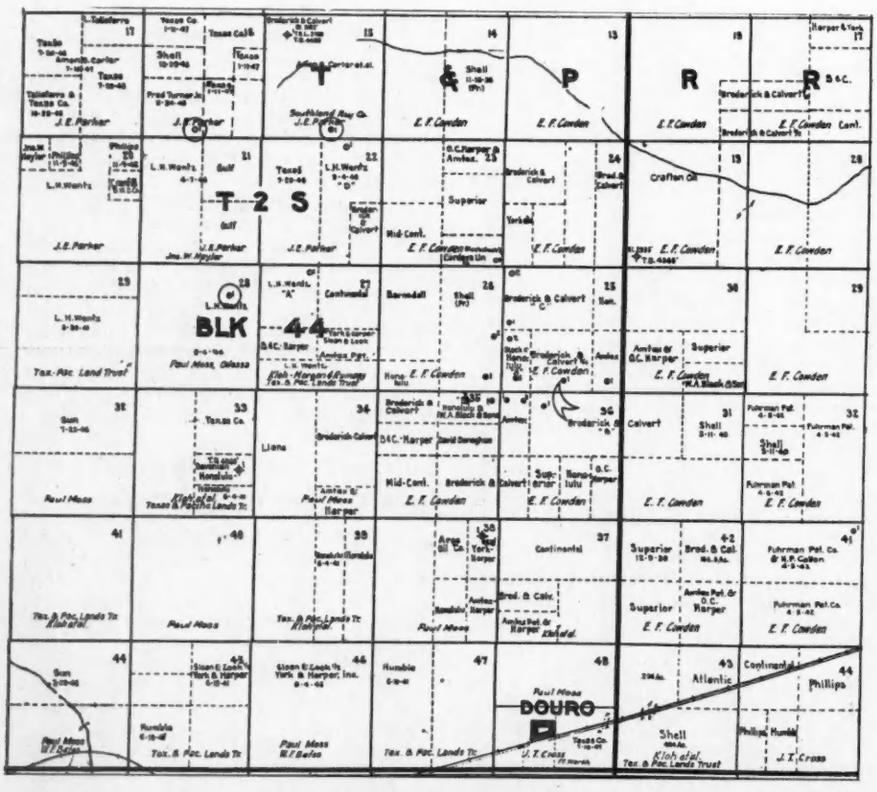
* * *

Duggan pool in Cochran gets four-mile extension.

Midland, Texas.—Conversion of the Harper field, Ector County, into an important producing area has been made possible by two extensions to the west and northwest that expand the productive limits from about 640 acres to nearly 3600 acres. Performance of these outpost wells reveals that attractive production is attainable from the leases thrown open for development, and that the highest portion of the anticline is two miles west of earlier development.

Owners of leases within the enlarged area outlined by production are preparing to proceed with development. Competitive drilling will result in the completion of in excess of 100 wells in the 4200-foot Permian lime zone. Seven wells were on production when the September proration schedule was released by the commission for a total allowable of 411 barrels. Three completions have since been added. Wells are prorated on a potential basis, and currently the potential factor is .1354 of the rated yield after deducting a marginal allowance of 25 barrels.

Harper field is entering its fifth year as a source of production. Discovery was made by Broderick & Calvert, Inc. and O. C. Harper's E. F. Cowden 1, located 330 feet north of the center of the south line of T&P Section 25, Block 44, T-2-S, with an initial flow of 306 barrels of 37 gravity oil after nitro shot in lime at 4117-4338 feet. The well began heading September 24, 1933, while drilling in.



Map Courtesy Southwest Mapping Company, Fort Worth.

West and northwest extensions given the Harper field, Ector County, indicated on the above map by circles, is to result in an active drilling program on intermediate acreage. Discovery well (arrow) has been on production four years.

High Gravity Oil

High-gravity oil yield distinguished this area from three previous discoveries in Ector County. The geological section was likewise somewhat different. These unusual features caused some of the most active operating units to pass up an opportunity to acquire lease protection in the Harper area. Discovery of the Goldsmith field, situated on a general northwest trend, in 1935, revealed an almost identical character of lime and geological section, and the same quality of crude. Although the Harper and Goldsmith fields are on the same strike across the county, the latter registers a sharp structural dip on the southeast, precluding any possibility of a connection. Intermediate acreage is untested, except for an abandoned test drilled as an outpost for the Harper area. It was capable of making a small well.

Exploration of the Harper anticline derived its cue from a small gasser drilled by Weekley Oil Corporation, Casteel and McCurdy on the Cowden ranch, C SE NW T&P Section 33, Block 43, T-2-S, three miles east by south of the discovery oil well that followed. This wildcat passed up gas showings at 3814-27 feet in drilling to sulphur water at 4375 feet. Hole was plugged back to 4305 feet, and the well tested 728,000 feet of gas about April 1, 1932. Broderick & Calvert, Inc., entered the area as an operating unit, and drilled J. E. Parker 1, NW NW NW T&P Section 15, Block 44, T-2-S, logging free oil at 4225-31 feet and 4388-95 feet, followed by sulphur water at 4477-85 feet. Hole was plugged back to 4417 feet for 100-quart nitro shot, and the well tested 800 feet of oil and water. It was abandoned October, 1932, without a pumping test. This showing resulted in the latter shifting their explorations 3¼ miles to the southeast for the first successful oil completion.

Early attempts to score major extensions to the Harper area centered to the southwest and northeast, and each of the three failures encountered nominal oil and gas showings. Honolulu Oil Corporation et al's T. P. Land Trust 1, C SW SE Section 33, Block 44, three miles to the southeast of the producer, was abandoned in May, 1934, in sulphur water at 4255-59 feet, while R. L. York, O. C. Harper et al's W. F. Bates 1, C NE NE Section 38, Block 44, 1-1/3 miles south by west of the discovery, quit July, 1934, in sulphur water at 4455-4518 feet. Crafton Oil Company et al elected to try for a northeast trend in drilling E. F. Cowden 1, SW SW SW T&P Ry. Section 19, Block 43, T-2-S, one mile northeast of production, and also logged oil showings prior to reaching the water level at 4352-65 feet in January, 1936. The latter two failures narrowed the potential width of the field.

During this spasmodic outpost drilling, owners of leases adjacent to the discovery site refrained from engaging in a competitive drilling program. Amtex Petroleum Corporation and Shell Petroleum Corporation each have two wells, while Honolulu Oil Corporation and W. A. Black have three producers

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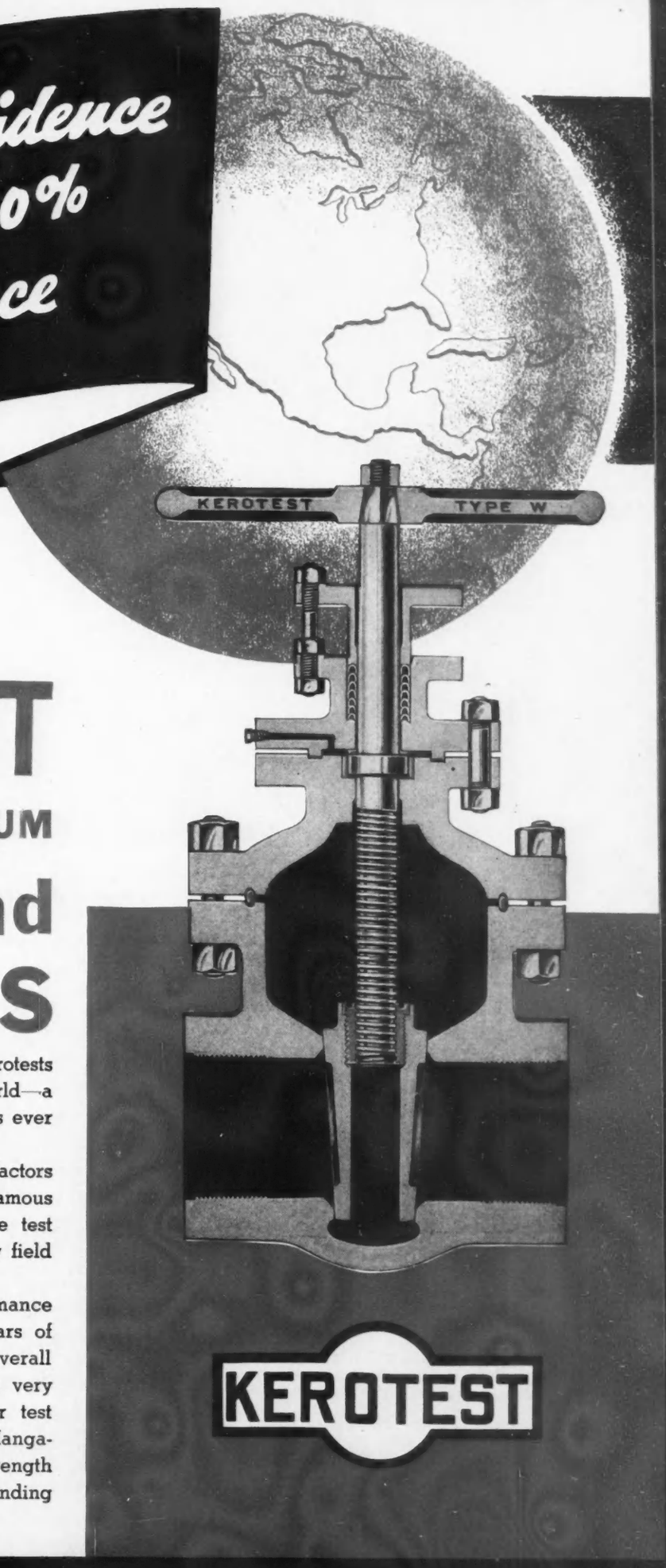

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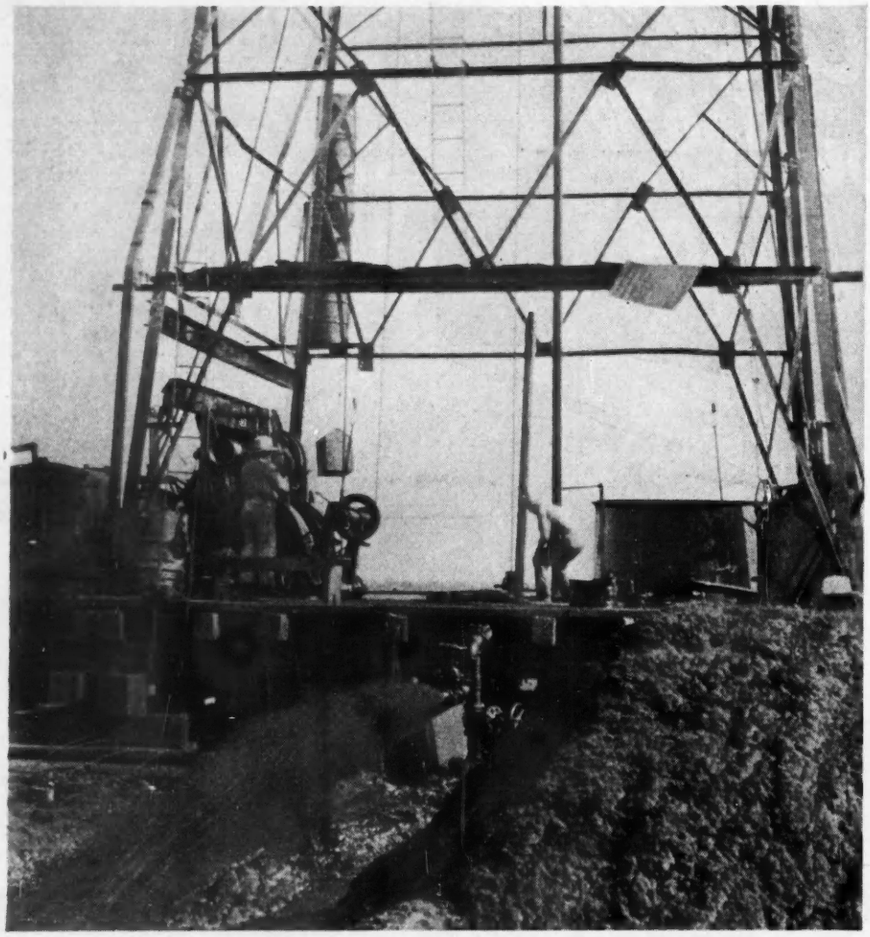


Cable tools were used to complete the above producer in the Harper field, Ector County, after landing the 7-inch oil string at the 3900-foot level.

on two leases. Broderick & Calvert, Inc., have added their second producer through the completion of Cowden 1-B, NW NE NW Section 36, rated at 737 barrels initial after 590-quart shot at 4100-4254 feet.

Production was advanced two miles to the northwest through the recent completion of Amon G. Carter and J. W. Naylor's J. E. Parker 1, SW SW SE Section 15, flowing 608 barrels initial after using acid in lime at 4080-4270 feet. The original failure for the area is in the northwest corner of this 640-acre lease. This well altered the outlook for production.

Width of more than three miles was given the area when L. H. Wentz et al's Paul Moss 1, near C NE T&P Ry. Section 28, about two miles west of production, developed natural flow of 285 barrels while drilling at 4086 feet, with an elevation of 3088 feet. It began flowing by heads at 3999-4015 feet. Highest initial yield for the area is expected from this outpost when the oil zone is acidized, or shot with nitro. Top of Yates was logged at 2680 feet, and first lime at 3630 feet. Wentz et al have made location for an immediate test on lease adjoining to the east, and also a southeast diagonial offset to the Parker outpost producer.

Use Rotary and Tools

Drilling conditions in the Harper field are adapted to rotary or cable tools. Most popular procedure is to use rotary to the 3900-foot level, where 7-inch pipe is cemented above the first saturated zone, then change to a standard unit. About 200 feet of surface pipe is needed. Cable tool projects set two joints of 15-inch, and cement 8⅝-inch through the salt series at 2800 feet, then land 7-inch oil string. Rotary rigs drill to the last casing point in about 17 days.

Average cost of completed wells is $35,000, but does not include pumping units. The pumping load factor is low since the field is immune from water.

Humble Pipe Line Company has been serving the field since its inception. Shell Pipe Line Corporation has lately entered with a 6-inch line, and is buying outside oil in addition to its controlled production.

Tide Water extends Rotan lime field half mile

Abilene, Texas. — Production limits of the prolific lime field near Rotan, Fisher County, were extended ½ mile east when Tide Water Associated Oil Company's Waddell 1, near C WL N½ of H&TC Ry. Section 173, Block 2, gauged 125 barrels natural the first hour. The flow declined 50 percent the second hour, due to cavings. This well is about 13 feet higher structurally than the nearest producer. It penetrated 9 feet in the porous lime in drilling to 3501 feet.

Lewis Production Company previously scored its second big well in completing Morrow 2 with a natural flow of 123 barrels oil in 30 minutes, with the hole bottomed at 3542 feet.

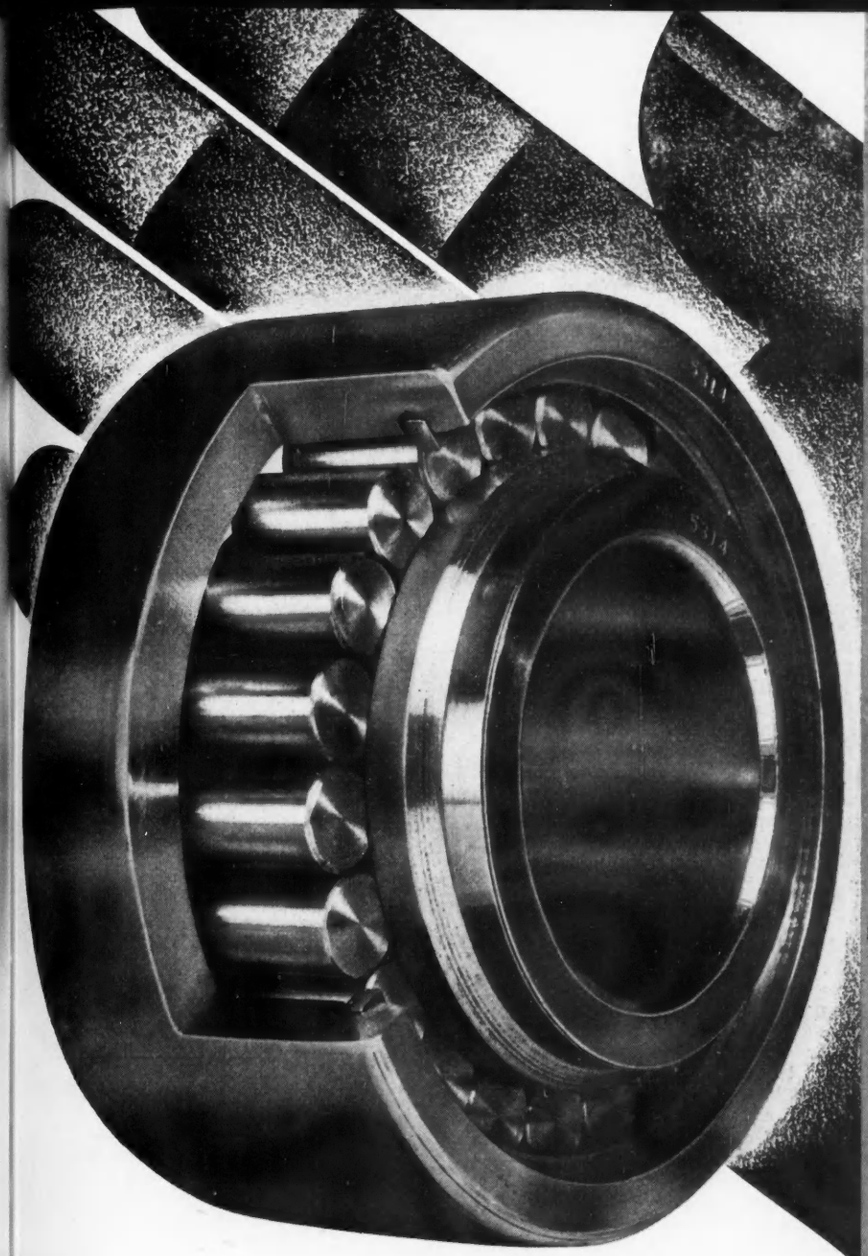
The first large producer in the Avoca field, Jones County, completed without using acid, was scored by Iron Mountain Oil Company and Humble Oil & Refining Company. Haterius 1, SWc NE of BB&C Ry. Survey, flowed a maximum of 192 barrels per hour from Canyon lime at 3238-47 feet, with an elevation of 1543 feet. Two previous completions required acid to attain steady flow.

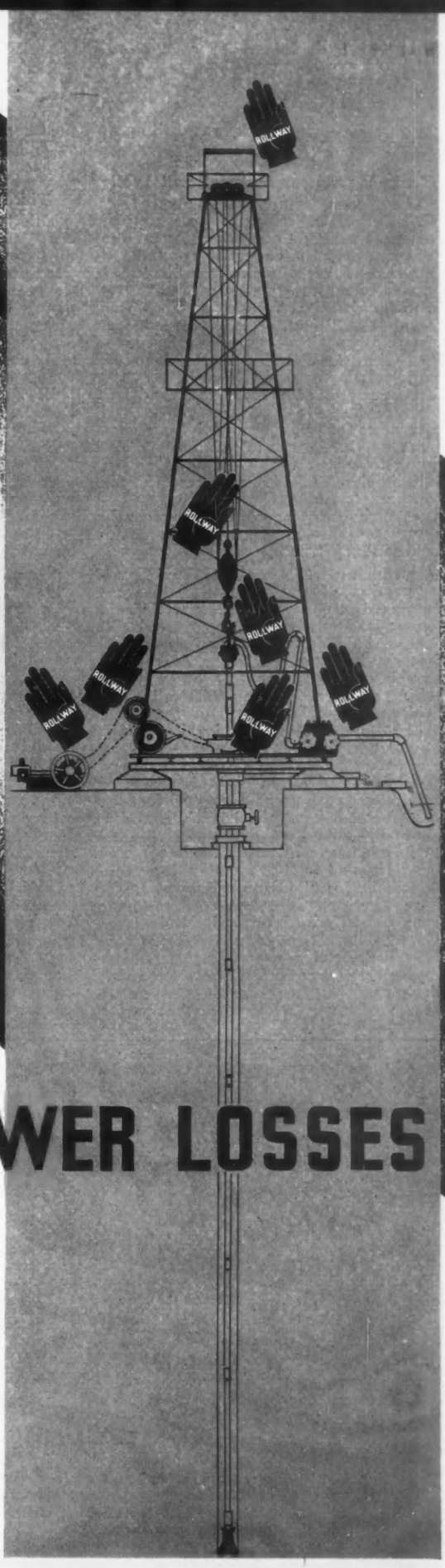
Revival of drilling in northeastern Stephens County to the Marble Falls lime zone gained new support when Barnett Petroleum Corporation and C. F. Greenwood's Corbett 1, S. P. Ry. Survey, Block 3, Abstract 1971, tested 10,000,000 feet of gas with spray of oil at 3994-95 feet. Production has been killed to cement, as the well was drilled in with open hole below 2524 feet.

Cochran County extension in process of completion

Midland, Texas. — Four-mile northwest extension to the Duggan pool, Cochran County, was in process of completion late last week. This new strike was drilled by Pete N. Wiggins, C. Ed Hyde et al on the Dean-Slaughter ranch, Labor 26, League 92, Lipscomb County School Lands, and the hole filled 1500 feet with 27-gravity oil from porous lime at 5004-5025 feet. Owners plan to deepen then shoot with nitro, or acidize. This prospective producer is located on an 8000-acre block purchased last March from land owner for a cash bonus of $10 per acre, with a drilling obligation. Sufficient protection acreage was sold to fully finance the project.

Oil horizon logged by Dean-Slaughter 1 is about 51 feet higher on structure than Honolulu Oil Corporation, Cascade Petroleum Company and Devonian Oil Company's Duggan Bros. 1, C Labor 13, League 55, Oldham County School Lands, which scored the northernmost producer in the Permian basin in October, 1936, flowing 396 barrels initial after nitro shot and acid. The latter plugged off water at 5080-98 feet, and is currently prorated to 121 barrels daily, with production from lime at 5018-68 feet. The third producer for the area logged top of Yates at 2868 feet, and brown lime at 4220 feet, with an elevation of 3730 feet. M. S. Ingleright and E. E. Fogelson's Tarver-Duggan 1, located ⅜-mile northwest of the discovery, flowed 350 barrels initial early last month after acidizing lime at 5000-55 feet, having plugged off water at 5057 feet, or 1367 feet sub-sea. Devonian Oil Company is seeking a northeast extension to the original pool in starting operations on Duggan 1, NWc N½ Labor 11, League 55. Wiggins, Hyde et al's Dean-Slaughter 1, NEc League 58, Martin County School Lands, four miles north by east of the pool, is drilling at 2200 feet. The Texas Company's Slaughter 1, League 130, Carson County School Lands, wild-





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cat on a 7000-acre block, was drilling at 4660 feet.

Yoakum Outpost Makes Small Well

The Texas Company's Walker 1, C SE SE Section 794, northwest outpost for the Yoakum County portion of the Wasson field, is expected to make a small producer, having swabbed 1½ barrels of oil hourly on periodical tests in drilling to 5171 feet. Top of pay was found at 5090 feet, or 1434 feet sub-sea. Moore Bros. Corporation's Geo. Cleveland-Ohio 1, C NE NE Section 706, could not lower water level below 4100 feet when tested at 5506 feet, and has plugged back to 5328 feet to test oil saturation passed up in fulfilling contract depth. Denver Producing & Refining Company's C. A. Elliott 1, C NE NE Section 832, is a new test for the southern Yoakum County area, and is a west offset to the company's recently completed flowing producer on the Whittenburg tract.

Producing wells in the Gaines County portion of the Wasson field were increased to seven the past week. Amerada Petroleum Corporation's R. A. Cox 1, NWc Section 380, about 2970 feet south of the discovery, flowed 592 barrels oil in 20 hours through 1-inch tubing choke after using 6000 gallons of acid at 4897-4952 feet. It is bottomed at 1498 feet below sea level. Phillips Petroleum Company's Carter - Wasson 1, west offset to the discovery, flowed 471 barrels of oil in eight hours after using 5000 gallons acid at 4980 feet, or 1422 feet sub-sea. The latter's Brand 1, about 1⅝ miles to the northwest, failed to flow when acidized at 5011 feet, and has deepened to 5030 feet. Tubing packer will be installed to acidize the lower lime section. Plugging orders have been issued for Amerada Petroleum Corporation's Seagraves Bank 1, C SE SE Section 66, westernmost test, after registering structurally low on anhydrite and salt markers in drilling to 2140 feet. It is a northwest offset to the company's Armstrong 1, which swabbed 95 percent water when drilled to 5079 feet and acidized.

Third Test in Jones Ranch Area

The Jones ranch area in northwestern Gaines County is to be given a third test after failures were drilled by Continental Oil Company and Argo Oil Corporation. Continental Oil Company's Jones 1 failed to show gas when plugged back from Permian lime at 5156 feet to Yates sand at 3125-3250 feet, and rig will be moved 1½ miles to southeast to drill Jones 2, C SE NE PSL Section 1, Block A-8. Argo Oil Corporation's Jones 1 was abandoned in water at 5296 feet.

Dual acid treatment of Stanolind Oil & Gas Company's Slaughter 1, second producer for the Slaughter pool, southwestern Hockley County, stepped up the production to 30 barrels hourly, but the well requires intermittent swabbing to maintain this yield. It is two miles east by south of The Texas Company discovery and used 6000 gallons of acid in lime at 4940-4975 feet.

Winkler County Water Flow Controlled

Successful completion of a flowing producer after excluding prolific flow of water between the upper and lower oil zones in the Eaves field, northern Winkler County, was credited to Gulf Oil Corporation. This concern's W. P. Edwards 2-A, NW SE NE PSL Section 6, Block C-23, flowed 500 barrels water and oil, with 1,700,000 feet of gas, from first pay at 3053-3105 feet. Hole was deepened with cable tools, and top of the lower oil saturation was cored at 3123 feet. Seven-inch pipe was cemented at the latter depth, cutting off the upper water. The well was completed last week at 3150 feet, with an elevation of 2928 feet, and flowed 232 barrels of pipe line oil on proration gauge, testing 29.7 gravity. The gas volume was rated at 230,000 feet daily. The company will not risk losing the casing seat by using acid.

Mid-Continent Petroleum Corporation's Hinkle 1, NWc T&P Section 29, Block 42, T-2-S, one mile south of nearest production on the southeast edge of the Foster field, Ector County, filled 1200 feet with oil from broken lime at 4229-46 feet. It will be deepened to near the 4300-foot level, and is expected to make a producer after the customary nitro shot. Top of Yates was logged at 2815 feet, and first lime at 4160 feet, with an elevation 2909 feet. Sun Oil Company's John Kelly 1, NWc Section 20, south offset to a pumper and nearest test to the above outpost, filled 3000 feet with oil after 485-quart nitro shot at 4216-4346 feet. The latter logged top of Yates at 2890 feet, with an elevation of 2927 feet, and is lower structurally than Hinkle 1.

Fuhrman Petroleum Corporation, Colton & Lester, Inc.'s E. F. Cowden 1, NEc T&P Section 41, Block 43, T-2-S, two miles southeast of nearest production in the Harper field, Ector County, encountered oil and gas shows below 3988 feet, and was drilling at 4020 feet. Top of Yates was logged at 2715 feet, and first lime at 2930 feet, with an elevation of 3024 feet.

West Texas demand is slacking off

Midland.—Sulphur contaminated crude produced by the majority of the fields in West Texas and Southeastern New Mexico is experiencing a slackened demand with the approach of the seasonal decline in gasoline consumption. Bulk of the oil from this bi-state district is absorbed by majors, who were caught with surplus gatherings over pipe line outlet, with few exceptions, during August. The excess had to be diverted to local tank farms. Nearly all serviceable steel tankage conveniently located near trunk lines was leased as a protective measure against the high August allowables being continued.

Goldsmith field, Ector County, has lately developed a soft crude market due to the largest buyer having exceeded its normal demand for sour oil and also its pipe line outlet. Negotiations are pending among majors to redistribute the well connections in this most active drilling center in the Permian basin. If the plan fails, the Railroad Commission may be called upon to slash the allowable from 11,936 barrels daily, else new completions may experience a delay in obtaining pipe line connections. Pipe line outlet for the field is adequate if the well connections are prorated among the carriers.

Slackened demand for sour oil is apparent in other sections of the district, but is considered a temporary condition created by refineries taking steps to adjust their operations to fall and winter schedules.

One of the largest purchasers of oil in West Texas and New Mexico is attempting to introduce 2- and 3-year oil buying contracts. The plan made its appearance when representatives of the company contacted owners of wells in Gaines and Yoakum Counties, and other recently discovered areas in the north portion of the basin. No pipe line or railroad facilities serve these fields. Property owners have refused to accept the proposition, since two other pipe line units have proposed to extend

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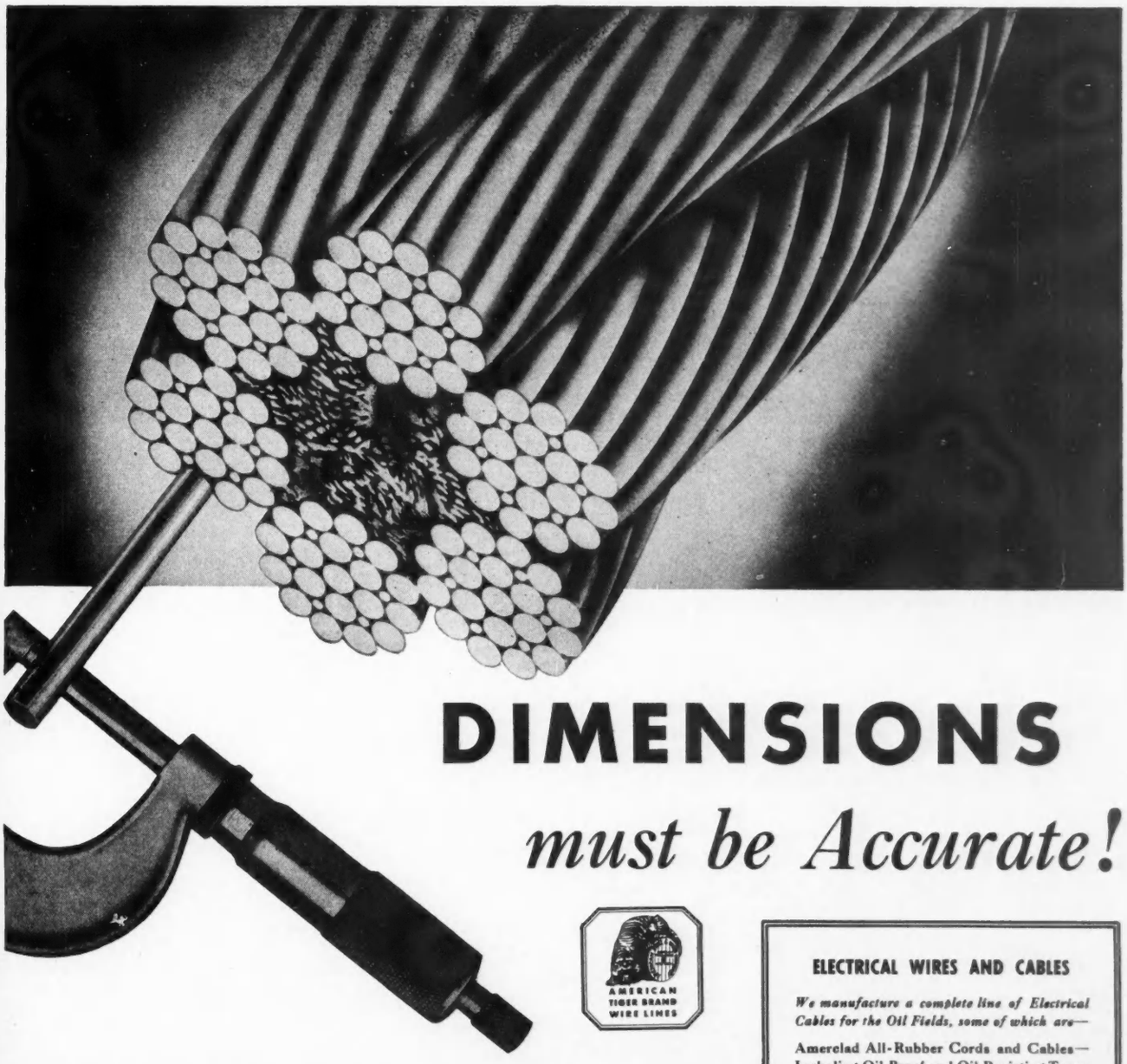

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lines from Monument and Hobbs field, New Mexico, to handle controlled production and outside purchases when their respective trunk line outlets to the Gulf Coast can be increased in capacity.

Demands for 3-year crude contracts have also made their appearance in Lea County, New Mexico, from the same source. A specific instance involves a quantity of oil being run and purchased on open division order. The company that has first call on this production is amply supplied with sour oil, and may enter into a contract rather than to take the responsibility of providing a market.

Long period crude selling contracts are not popular with operators in the basin. Several majors attempted to force contracts during the early stages of development work in the district.

Possibility of a major war and unprecedented demand for all grades of oil suitable for the manufacture of gasoline is believed to be the basis for the introduction of crude contracts. Property owners generally retain the original pipe line connection as development in a given area progresses. Switching of connections in the Permian basin have always been at a comparatively low level.

Commission grants permits for 375 wells in Texas

Austin.—The Texas Railroad Commission approved last week permits for drilling 375 new wells in Texas, 73 more than were allowed the week before.

In East Texas field there were 64 locations, there being 37 in Rusk, 19 in Gregg, and 8 in Upshur County. The East Central Texas district listed 24 scattered locations.

West Texas area reported 74 permits, including 15 in Winkler, 14 in Upton, 11 in Fisher, and 10 in Ector County. There were 23 new locations in Panhandle district, 12 of which were in Hutchinson County.

There were 47 permits reported in North Texas, including 12 in Jack County and 11 in Wichita County. West Central Texas listed 28 new locations.

TEXAS PANHANDLE Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
CARSON COUNTY—		
Cities Service, Magnolia 5-E	597	3087
Skelly, H. Schafer 86	931	3140
GRAY COUNTY—		
Bradshaw O&G Co., W. W. Harah 12	493	3212
Cities Service, W. C. Archer 6-B	548	3285
W. E. Crow 6	623	3293
I. B. Hughey 7-B	681	3295
F. W. Dye et al, A. Holmes 7	455	3270
Gulf, Worley-Combs 2	272	3166
The Texas Co., J. C. Short 6	465	3032
HUTCHINSON COUNTY—		
Benonine Oil Co., W. F. Starnes 5	955	3180
J. R. Phillips Employees, Inc., E. Thompson 1	628	3032
Phillips Pet., Cockrell 22	397	3076
Goodin 2	363	3079
R. E. Thompson 3	356	3261
Stanolind, W. B. Haile 5-B	241	3073
Stansylvania O&G Co., Mrs. B. Wisdom 1	579	3068
H. Stekoll & Darby Pet. Co., Dial-Perkins 6	204	3140
MOORE COUNTY—		
Phillips Pet., Ada 1	¶33	3466
W. C. Stegall 1	¶80	3460
Shell-Sinclair, R. N. Hohmann 1	¶61.7	3189
Edith Miller 1-A	¶36	3344

*Failures; †Junked; ¶Million cu. ft. gas.

WEST TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ANDREWS COUNTY (Fuhrman)—		
Landreth Prod. Corp., L. Jones 1	667	4485
CRANE COUNTY (Jordan)—		
E. E. Fogelson et al, University 1-C	220	3598
The Texas Co., University 1-B	†	1065
CRANE COUNTY (Gulf-McElroy)—		
Gulf, J. T. McElroy 157	217	2960
CRANE COUNTY (Sand Hills)—		
Gulf-Cranfill Bros., J. B. Tubb 10	775	4418
CRANE COUNTY (McCamey)—		
Continental, E. S. Hughes 7-D	379	2416
CROCKETT COUNTY (Wildcat)—		
H. A. Ringle et al, A. C. Hoover 1	*	2707
ECTOR COUNTY (Foster)—		
Atlantic Ref. Co., J. L. Johnson 1-B	707	4269
M. B. K. Drl. Co., Foster 2	673	4190
York & Harper, Inc.-Sloan-Zook Co., H. C. Foster 2-B	616	4255
ECTOR COUNTY (Goldsmith)—		
American Maracaibo Co., C. Scharbauer 5-A	497	4232
Continental, T. P. Land Trust 3-B, sec 35	284	4285
Gen'l Crude Oil Co., H. E. Cummins 2-A	733	4235
Humble, C. Scharbauer 1-C	652	4220
Landreth Prod. Corp., C. Scharbauer 6-F	1469	4230
C. Scharbauer 5-I	1800	4211
ECTOR COUNTY (Harper)—		
Broderick & Calvert, Inc., E. F. Cowden 1-B	737	4254
Amon G. Carter-John W. Naylor, J. E. Parker 1	608	4270
ECTOR COUNTY (Judkins)—		
Skelly et al, J. Scharbauer 7-A	475	3610
GAINES COUNTY (Wildcat)—		
Amerada, 1st State Bank (Seagraves) 1	*	2140
Argo Oil Corp., E. H. Jones 1	*	5296
GLASSCOCK COUNTY—		
Conoco-Group 1 Oil Corp., S. T. Eason 4-A	1696	2449
Settles 1-B-S	*	1316
Loffland Bros. Co.-Moore Bros. Corp., McDowell 4	223	2250
McDowell-Woodley 1	*	2524
JONES COUNTY—		
Maracaibo Oil Explo. Co.-W. L. Pickens, C. Olander 1	3600	3284
R. S. Allred & R. W. Gray, H. C. Jackson 1	600	2002
Brown Eagle Oil Co.-S. B. Roberts Co., W. S. Lewis 4	*	2014
W. S. Lewis 1-B	*	2285
Guitar 1	868	2003
Joe DuPree et al, Mrs. E. Jackson 1	25	2005
Condor Pet. Co., H. Sayles 12	642	2002
R. B. Farris et al, Guitar Est. 3	591	2002
Farris-L. Fikes-Ungren & Frazier, Guitar Est. 10	166	2002
Guitar Trust Est., fee 6	1250	2001
fee 7	850	2003
S. C. Herring et al (was J. E. Childers, Walters & Smith), Jackson 1	1000	2002
Thos. D. Humphrey, Guitar 3-A	115	2015
Guitar 4-A	*	2018
King Oil Co., C. L. Carter 1	200	1948
Lewis Prod. Co., H. Sayles 5	352	1985
Sinclair Prairie, B. King-Dorsey 8-B	180	2177
Ungren & Frazier, H. Dorsey 12	163	2166
H. Dorsey 1-E (118½-ac)	188	2206
H. Dorsey 1-G (10-ac)	870	2180
J. H. Shipley 2 (10-ac)	105	2007
PECOS COUNTY (Toborg)—		
Cardinal Oil Co., Tippett 3-N	*	1274
UPTON COUNTY (Gulf-McElroy)—		
Gulf, J. T. McElroy 157	501	2955
UPTON COUNTY (McCamey)—		
Brown-Hancock-Hines Oil Corp., Baker-Pure 4-A	250	2265
Continental, A. A. Reese 12	353	2400
A. D. Devore-J. R. Minnich, Burleson-Conoco 8	995	2161
Geo. E. Farley et al, Estep-Shell 4	65	2363
Gulf, J. H. Shirk 12	649	2331
Homestead O&G Co., Hughes-Pure 6	873	2730
TP Coal & Oil Co., M. Shirk 8-D	372	2330
M. C. Ulmer et al, Burleson 4	257	2280
Weekley Oil Corp., Cordova Union 1-B	*	2325
Williams & Williams Drl. Co., Robbins 5	480	2146
WARD COUNTY—		
Culbertson & Irwin, Inc., J. Sealy 1	432	2740
Engineers Oil Co., A. J. Adcock 1	†	715
Gen'l Crude Oil Co., Hathaway 4	2078	2665
Gulf, E. W. Estes 50	839	2690
E. W. Estes 51	411	2620
Humble, L. Richter 18	2131	2942
Samwan Oil Co., Brandenburg 1	150	2251
Tide Water Associated, Johnson 40	1468	2618
WINKLER COUNTY (Henderson)—		
R. Olson Oil Co.-Jeffers Oil Co., T. G. Hendrick 3	270	3086
WINKLER COUNTY (Kermit)—		
Gulf, Daugherty 59	1915	3020
Humble, N. R. Colby 17-C	349	3100
W. A. McCutcheon 10	408	3015
Magnolia, N. R. Colby 13	425	3120
Navarro Oil Co., C. C. Crenshaw 1	1218	3100

NORTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ARCHER COUNTY—		
Bridwell Oil Co., L. F. Wilson 3-F, blk 23	10	1391
L. T. Burns et al, M. A. Collins 2, blk 33	3	1478
M. S. Fichte 2, blk 34	*	1480
W. F. Dodson et al, W. P. Harmonson 1	*	878
Dick Duncan et al, N. I. Andrews 7, lot 18	*	992
Fraser & Proctor, P. P. Durham 1, blk 52	*	1508
Holbrook & Woods, J. S. Matlock 2, blk 25	*	700
T. G. McCurdy et al, M. F. Martin, 2	5	991
Bo Minnich et al, W. H. Taylor 3, sec 1	2	430
A. C. Parks et al, J. S. Matlock 1, blk 25	*	700
Underwood Drl. Co., Campbell 20-B, sec 1373	*	1051
Westmount Oil Co., T. J. Dempsey 1, blk 10	20	1107
CLAY COUNTY—		
Bridwell Oil Co., H. Boddy 1	*	2333
Sussex Oil Co., C. J. Shumake 3, lot 4	37	1147
COOKE COUNTY—		
Bridwell Oil Co., J. R. Parkey 5	10	585
Denver Prod. & Ref. Co., J. M. Pearce 1	*	3240
L. A. McWhirter et al, J. W. Davidson 1	*	715
A. D. Robinson et al, J. H. Otto 7-B, blk 5	25	1317
Tydal Ref. Co., Ed. Wilson 1	32	2038
Wallace & Weatherly, J. R. Winstead 1	48	1168
DENTON COUNTY—		
California Ref. Co., Western & S. W. Life 1	*	1467
FOARD COUNTY—		
Jas. B. Baker, Jr. et al, J. F. Long 1	*	3505
JACK COUNTY—		
Algord Oil Co., S. M. Jones 3	357	3252
Brazos River Gas Co., King 2-B	566	2926
Everts Drl. Co., M. Bryson 3	15	3125
Hanlon-Buchanan, Inc., F. H. Rhodes 2-A	*	3312
Moncrief & Showers, Inc., J. M. Box 4	384	3248
Taubert & McKee, J. M. Box 1	*	3132
Clayton Bros. 2	132	3002
MONTAGUE COUNTY—		
Lesh & McCall, A. B. Hinton 1	¶3½	775
Sinclair Prairie et al, V. Holt 2, blk 56	186	1748
THROCKMORTON COUNTY—		
Carl B. Bailey et al, N. K. Haley 1, sec 2440	*	1500
WICHITA COUNTY—		
The Bonner Co., 1st Nat'l Bank 1-B, blk 29	1100	3866
Cable Oil Co., J. E. Roller 28	1	238
Deep Oil Dev. Co., Munger Farm Co. 1-E, blk 25	3036	3830
W. H. Hammon et al, Waggoner Bros. 2, blk 7	5	416
W. B. Omohundro et al, J. A. Kemp 1, blk 52	*	4012
Perkins & Cullum, T. L. Burnett 4-A, sec 1	*	1670
Mrs. J. L. Pyle et al, Munger 8, blk 30	10	1096
Ruyle Farm Oil Co., L. B. Ruyle 53	*	1711
YOUNG COUNTY—		
S. S. Alexander et al, W. L. Boyd 2, sec 1455	*	1110
Clyde-Texas Oil Fields Co., W. A. Corbett 1	†	4374
R. R. Cocke et al, T. J. Routon 1, sec 265	*	748
U. Hampton et al, R. L. Heard 1, sec 87	*	1203
F. W. Jones et al, J. L. Hawkins 1	*	1251
Homer Lee et al, J. L. Boone 10, blk 1	1	518
R. H. Vise et al, R. W. Easterling 2, sec 426	150	3902
L. W. Wickes et al, Sam Taylor 1	*	3800

EAST TEXAS

Big field maintains high rate of drilling activity.

* * *

Two Upshur County tests miss expected production.

Phillips well revives Rock Crossing activity

Wichita Falls.—Efforts to develop oil production from the lower Canyon lime in the Rock Crossing area, Wilbarger County, were revived when Phillips Petroleum Company's Waggoner Estate 1-KKK, SE NW SE of H&TC Ry Section 43, Block 4, logged favorable oil saturation at 3554-64 feet. Pipe has been cemented for a production test, which will be delayed several weeks. This prospective deep producer is on a southeast trend from the 3100-foot Canyon production.

Cosden Oil Corporation's Waggoner Estate 9-B, NE NW NW Section 31, also along the southeast trend, failed to produce from the upper Canyon although favorable saturation was logged at 2997-3011 feet. Four water sands, which do not exist in the main deep pay area, were encountered in drilling to 3050 feet.

Waggoner Refining Company's Waggoner 5-B, SW NE SW, Section 46, broadened the original Canyon area to the northeast with a flow of 630 barrels at 3068-72 feet.

Completion shifts McCamey operations to northeast

San Angelo, Texas.—Operations in the McCamey district, Upton County, shifted to the northeast when Homestead Oil & Gas Company and J. W. McLean's B. W. Owens 1, SE SE NW GC&SF Ry. Section 91, Block Y, pumped 136 barrels initial after using acid in lime at 2810-31 feet. It is about 1¼ miles northeast of a small pumper completed by Marland Oil Company and F. P. Zoch on the Keith tract in February, 1927, from shallower lime zone at 2338-69 feet.

W. E. Production Company's Wilcox 1, near C SW NE T&P Ry. Section 20, Block 33, T-1-S, Howard County, and east of production in the Harding area, filled 1500 feet with oil from broken lime section at 317-97 feet and 3214-18 feet. The hole will be deepened and acidized. Moore Brothers Corporation's Harding 1, SW SW NW Section 19, located a short distance northwest of the discovery, pumped 80 barrels oil and 20 barrels water after using acid twice at 3193-3517 feet. The well has been plugged back to 3460 feet to reacidize.

Kilgore, Texas. — The East Texas field is maintaining its high level on drilling operations in the face of a large quota of completions for two successive weeks. Survey of field operations accounts for 93 rigs in service, as compared to 92 one week previous. Total of 59 completions were recorded for the past week, including four failures and a junked test, while the high mark for the year was approached one week earlier when operators added 69 producers.

Magnolia Petroleum Company missed the oil sand in drilling two tests on its L. K. Cone 100-acre lease in Upshur County section of the field. Cone 3 encountered small show of oil with salt water in testing sand 3758-3761 feet, while Cone 5 also proved to be a water well in coring to 3760 feet. Humble Oil & Refining Company's H. Castleberry 14, B. N. Hampton Survey, Gregg County, east edge location, failed to log sand in drilling to Georgetown lime at 3473-3502 feet.

EAST TEXAS
Completions

Company, Well, Location	Init. Prod. Bbls.	Depth
JOINER AREA—		
Craft, Burnham & Johnson, M. Wilson 1	*	3797
DeMontrond Oil Corp., L. J. Pinkston 9 (24.8-ac)	9000	3615
G.B.R. Oil Corp., E. S. Thrash 10 (4.92-ac)	4000	3749
E. S. Thrash 11 (4.92-ac)	3750	3761
Humble, C. J. Thompson 26 (116-ac)	6500	3687
Hunt Oil Co., R. W. Fair 30-A (136.72-ac)	7000	3679
R. W. Fair 33-C (211.4-ac)	9600	3622
S. Hunt & N. G. Landrum, Frederick 5 (12-ac)	160	3705
Magnolia, T. O. Mason 19 (144.8-ac)	240	3678
C. L. McMahon et al, J. Lee 10 (83-ac)	1000	3626
McMurrey Pet. Corp., G. A. Turner 20 (199-ac)	6200	3815
G. A. Turner 34 (199-ac)	2500	3802
Sinclair Prairie, A. S. Jarvis 16-B (106.9-ac)	960	3709
The Texas Co., M. Blackwell 24 (103.4-ac)	5300	3670
Ward Oil Corp., J. M. Finney 17 (74.51-ac)	†	3506
KILGORE AREA—		
J. S. Abercrombie-Harrison Oil Co., M. A. Cantrell 18 (56.11-ac)	8800	3667
American Liberty Oil Co., Sabine River 38, Tr. 5	8400	3521
Cities Service, E. L. Walker 18 (152.21-ac)	1000	3673
E. L. Walker 19 (152.21-ac)	2500	3654
Joe O. Ehlinger et al, M. Jackson 2 (8-1/3-ac)	7000	3661
R. W. Fair & Thompson, D. Carr 9-A (50-ac)	7200	3482
Gulf, G. W. Culver 36 (209-ac)	240	3537
W. G. Sexton 22 (165.58-ac)	1500	3721
Hamil & Smith, J. A. Knowles 4, blk 134	2400	3552
Humble, J. T. Sexton 18-A (137.48-ac)	4500	3678
Roy A. Reynolds et al, Elder Bros. 5 (20-ac)	120	3654
Sun, G. Reese 21 (124.22-ac)	1500	3666
J. D. Wrather-Overton Ref. Co. (was Westline), J. H. Morris 4 (36.66-ac)	900	3664
Texas Canadian Oil Corp., H. J. Thomas 7 (24.95-ac)	2000	3708
Tide Water Associated, H. P. Leverett 18 (109.44-ac)	8800	3675
W. C. Turnbow Pet. Corp., A. Clary 6 (22½-ac)	125	3551
LONGVIEW AREA—		
Atlantic Ref. Co., J. W. Bacle 8 (30-ac)	7600	3760
L. C. Collins-Gray & Wolfe, C. Fisher 12 (134.67-ac)	3600	3446
Deep Rock Oil Corp., B. Jones 19 (61.12-ac)	8700	3665
Gen'l. American Oil Co., T. Wells 14 (51.4-ac)	7200	3692
Gen'l. Crude Oil Co., R. C. Barnswell 14 (50-ac)	8500	3477
Gulf, M. O. Sheppard 51 (335-ac)	9200	3495
Humble, J. F. Bowles 19 (100½-ac)	9300	3595
H. Castleberry 14 (244½-ac)	*	3502
Joe Long Drlg. Co.-Cushing Drlg. Co., Owens 8-C (72-ac)	2500	3642
Magnolia, L. K. Cone 3 (100-ac)	*	3761
L. K. Cone 5 (100-ac)	*	3761
H. L. Foster 18 (101.41-ac)	9500	3570
W. E. Jones 19 (116¼-ac)	9000	3655
P. H. Pewitt et al, T. J. Kirk 5 (34-ac)	2000	3740
B. F. Phillips & S. F. Jordan, H. G. Corbin 1 (5¼-ac)	8200	3622
B. F. Phillips-Dean Bros., Douphrate 1-D (5-ac)	75	3740
Shell, W. T. Burnsides 24 (160-ac)	10000	3526
Sinclair Prairie, M. Moncrief 54 (307.7-ac)	10500	3580
Sklar Oil Corp., J. H. Alexander 5 (20-ac)	3600	3572
Stanolind, Cox-Hamon 15 (72.68-ac)	4500	3505
F. K. Lathrop 27-B (114.8-ac)	3500	3619
McKinley Bros. 58-B (54-ac)	3000	3590
Stanolind, Conoco & Tide Water, Flewellen 14-A (200-ac)	160	3765
Stroube & Stroube, R. J. Mackey-Humble 24 (314.6-ac)	3000	3620
Sun, A. Tooke 14-B (80-ac)	9600	3664
Sun-Seaboard Oil Corp., J. Rollins 18 (87-ac)	9200	3617
Tide Water Associated - Stanolind, Flewellen 52-B (374-ac)	1500	3765
United E&W Oil Co., E. L. Walker 15 (62-ac)	240	3598
R. M. Wood & Cora Hearrell, R. M. Wood 1 (1-ac)	7200	3606
ANDERSON COUNTY (Cayuga)—		
Roeser-Pendleton, Inc., Bowyer 3	500	7682
Tide Water & Seaboard, W. H. C. Goode 5 (1332.2-ac)	25	4020
FRANKLIN COUNTY (Talco)—		
Byrd & Frost, Inc., E. L. Phillips-Gulf 12 (400-ac)	264	4268
Humble, D. Reed 5 (80.94-ac)	208	4312
HOPKINS COUNTY (Sulphur Bluff)—		
Cities Service, J. E. Worsham 5 (149.31-ac)	240	4542
W. L. Goldston et al, H. J. Smith 15 (450-ac)	1200	4510
TITUS COUNTY (Talco)—		
GMW Oil Co., W. T. Edwards 3-A (10-ac)	170	4320
H. B. Wilson 2 (10-ac)	170	4320
W. B. Hinton et al, L. Stevenson 2 (34.8-ac)	79	4340
Humble, M. Batson 6 (144.27-ac)	498	4334
Lucey Pet. Co., I. N. Williams 4 (319.85-ac)	435	4294
ANDERSON COUNTY—		
Humble, S. Hassell 1 (80-ac)	*	4598
CASS COUNTY (Rodessa)—		
R. W. Norton, Starcke 5, D. Gilliam sur	240	6010
Ohio Oil, Willis 20, SFIW sur	195	5989
W. G. Ray Drilling Co., Parker B-2, G. Crowder sur	100	6050
MARION COUNTY (Rodessa)—		
Holcomb & Tomasson, Lizzie Henderson A-1 (Hilliard & Womack 1) R. Bennington sur	679	6050
SHELBY COUNTY (Joaquin)—		
Portex Oil Co., Pickering Lbr. Co. 3, A. Hansen sur	¶6 & 42	5090

McFaddin field well flows 22 gravity Catahoula oil.

* * *

North Sweden extended over mile northwest.

Corpus Christi. — Low gravity oil production, likely from the Catahoula, has been established in McFaddin field, Victoria County, by completion of Transwestern Oil Company's A. M. McFaddin 1-E. The well, according to latest gauge, flowed eight barrels of 22 gravity oil per hour through ¼-inch choke under pressures of 90 pounds on tubing and 575 pounds on casing. The test had drilled to 4413 feet, 9 feet in sand, and has 9⅝-inch casing landed at 4390 feet.

The above well is 2640 feet from the east line and 3200 feet from the north line of the F. Lewers Survey, Abstract 255, and is on acreage farmed out by Barnsdall Oil Corporation. It is in the general vicinity of shallower gassers.

Is Field's First Oil Well

This well is the first real oil producer for the field. Several other wells have been finished in Frio sands to below 6000 feet, but none of them provided a great amount of recovery. The shallower horizon, however, likely will be consistent and may lead the way to considerable drilling. Catahoula sands, overlying Heterostegina zone, are productive in the various fields along trend southwest, including such areas as Greta, Refugio, Taft, Saxet, etc.

Also in Victoria County, Keeran field was in the spotlight. Union Oil Company of California's Claude A. Keeran 6, 838 feet southwest of Keeran 5, was making a production test at 5613 feet in sand reported to have been topped at 5598 feet. A drill stem test recovered 1500 feet of pipe line oil. This sand, while found in several other wells drilled in the area, has never been produced.

Flour Bluff field, Nueces County, suffered its second set-back through the failure of another south outpost well. Humble Oil & Refining Company et al's Kate Ritter 3-A, Lot 23, Section 55, was abandoned at 6689 feet.

Trying to Open Deep Sand

In the same county, Seaboard Oil Corporation of Delaware was drilling plugs after a series of squeeze jobs in K. L. Shaffer 1. The well, in Luby field, is in sand at 7291-7311 feet with casing set on bottom. It is attempting to open a new deep sand for the area. Same operator's Luby 2, 1400 feet northwest of the field, is in process of completion at 5042-59 feet, an extension being assured.

Southern Minerals Corporation's Bessie Elder 5, which recently extended Saxet field's deeper sand about one-quarter mile east, flowed 28.6 barrels of oil in six hours through 7/32-inch choke with pressures of 500 and 1000 pounds on tubing and casing, respectively. Production is coming from 6733-41 feet.

Danrey Oil Company's Jean Davis 1-A, attempting to extend the McCampbell field, San Patricio County, two miles southwest, has drilled plugs and perforated casing about 7100-5 feet. It drilled to 7117 feet and set pipe on bottom. This field's main development has been in Aransas County, where sands ranging from 6550 to 7100 feet are productive.

Barnsdall Oil Corporation is testing Kate Edwards 1-A, deep test on Lamar prospect in Aransas County. The well, which originally drilled to 9785 feet, sidetracked and drilled to 8267 feet, setting 7-inch casing at 6184 feet. Perforations were made with 20 shots at 8012-20 feet, where a drill stem test recovered 3 stands of gas and dstillate cut mud and 10 pounds pressure. The perforations have been squeezed off and a new set are being made.

Corpus Christi. — Preparations were being made late in the week to kill the wild flow of gas and salt water from Southern Minerals Corporation's F. E. Bliss 21, Saxet field of Nueces County. The well blew out September 9 while attempts were being made to run 10-inch surface casing to 1114 feet.

The well was giving no signs of cratering early in the day, neither was fire anticipated. The shallow, highly charged sands, however, may cause serious damage. The control will be attempted through perforating offset wells at this sand and pumping in water.

Extension to North Sweden flows at 150-barrel rate

Laredo.—J. B. Blanchard et al's Rosa V. de Puig 1, 1¼ mile northwest extension to North Sweden field, Duval County, and second producer in the upper Cockfield, flowed 25 barrels in four hours on a potential test through 5/32-inch choke, pressures being 450 pounds on tubing and 1075 pounds on casing. The 46 gravity oil is being produced from perforations at 5395½-98 feet, casing having been set on botton at 5437 feet.

Northeast Outpost Cores Sand

Just northeast of the field, Parr and Delaney Oil Company's F. Vaello Puig 12 cored sand at 4749-54 feet, shale to 4757 feet and sand to 4760 feet. A drill stem test recovered 412 pounds gas pressure with no oil. This well indicates a third producing level for the field in the Government Wells group of Jackson sands, it being about 40 feet higher than the next level and nearly 100 feet shallower structurally than the main horizon of the field. This sand corresponds closely with

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that in Woodley Petroleum Company's Puig 1, producer on the eastern flank of the structure.

Over in Webb County, efforts by the French Oil Corporation to develop a new Mirando field 1½ miles east of the Killam-Oilton area failed with the abandonment of J. M. Garcia Estate 3. The well, located in the northeastern portion of Section 1121, showed for production in the 2100-foot horizon, but when a production test was made, it swabbed 1000 feet of salt water.

Play in Duval County

A rather interesting wildcatting play is underway in the southwestern portion of Duval County. The Gruy, Kohler and Driscoll Sevier ranches are the scenes of a number of wildcatting operations to test sands down to the Cockfield.

An immediate development program for the new northeast extension to Ezzell field of McMullen and Live Oak counties is in prospect. Two more locations were announced for the area before the completion of Bob Holland and Henderson Coquat's Matikin 1, ¾-mile northeast of production. The well is at 1512 feet, drilling plugs.

New sands found in Ricaby and North Alta Verde fields

Mission.—New sands in the Ricaby area of Starr County and the North Alta Verde field of Brooks County appeared to be hot spots of development in the Rio Grande Valley sector of South Texas during the week. Both wells were being tested late in the week.

Approximately one-quarter mile east of the South Ricaby field, two wells have picked up a sand in lower Frio zone about 100 feet below the regular sand and are testing. Dean Brothers' Valadez 1 cored oil sand at 1864-73 feet and set casing on bottom, while Barnett-Porter-Brown's Valadez 1, 800 feet to the north, found sand at 1890-94 feet and was making a drill stem test. This will be the third horizon for the field if proved productive.

Mestina Oil and Gas Company 2, Lease 2, being drilled by the Standard Oil Company of Texas in the new North Alta Mesa of Brooks County, was making a test at 2395-2400 feet after setting a string of 7-inch casing at 2392 feet. The well previously had shown 450 pounds pressure with 60 feet of mud in 7½ minutes at 2375-2400 feet. Mestina 1, northeast, showed for a producer at this level, but due to mechanical difficulties failed. It, however, made a gasser at a higher level to open the North field.

Drilling to Deeper Sand

Mestina 5, Lease 1, which recently opened a new sand in Alta Mesa at 4780-90 feet, has been making considerable gas. It was flowing 9½ barrels of oil with 824,000 cubic feet of gas through 5/32-inch choke and showing pressures of 1550 pounds on tubing and 1600 pounds on casing. Mestina 1, Lease 1, completed earlier in the year at 3588 feet, went to salt water and has started up to drill to the deeper sand.

Three rigs are running to the 8000-foot horizon in La Blanca field, Hidalgo County, none, however, being close to the sand. Two wells are being drilled by Dee Daveport et al, while a third is being sunk by Gulf States Oil Company.

K. E. Merren was still working with Starr County Cattle Company 1-A, Cockfield test in the Barbacoas field, Starr County. The well is making oil, mud and wash water, with considerable gas through perforations at 5417-27 feet.

Wildcat may open new field 5½ miles from Lockhart

San Antonio.—A new shallow Austin chalk and possibly an Edwards limestone producing district in Caldwell County appears possible with Taylor Refining Company definitely proving up a fault of 390 feet or more displacement 5½ miles southwest of Lockhart. Stacey & Harwood 1, E. Tyson Survey, tested dry in the Edwards limestone around 1400 feet, but has plugged back and is attempting completion in the Austin chalk topped at 991 feet. The test is structurally 390 feet higher than the test recently drilled by the McNeill Petroleum Company a short distance to the west and is 20 feet higher than the Sun Oil Company's test on the same tract, drilled about 200 feet to the southeast.

Activity as a whole was rather dull in the shallower sector of the Balcones district during the week, a few outpost wells providing minor extensions to chalk fields.

One important deep location became active: Diamond Half Oil Company's R. C. Donoho 1, in the western portion of a 200-acre tract in the J. Reynolds Survey, five miles northeast of Floresville. Humble Oil & Refining Company drilled wells in the immediate vicinity, which showed oil in the Serpentine and Austin chalk below 5000 feet.

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ESCROWS TRUSTS

SOUTH TEXAS Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MIRANDO DISTRICT		
DUVAL COUNTY—		
Argo Oil Co., Juan Carrillo 7, Sweden subd (North Sweden).....	600	4794
V. L. Blanchard, Rosa V. de Puig 1, 330 ft sl, 330 ft el of the nw¼, sec 8, Sweden Farm Lots sub, Santos Flores grant, 1 mile nw North Sweden (perf 5395½-98)..	325	5437
Bridwell Oil Co., J. G. Anciro 2, blk 19, Sweden subd, Santos Flores grant (North Sweden)	450	4768
O. W. Green 5 (A), BS&F easterly survey No. 118 (Hoffman)..	100	2720
Cox and Hamon, O. W. Greene 25, BS&F survey No. 118 (Hoffman)	80	2732
Gruy Estate 1 (2), AB&M survey (Rancho Solo)	45	1840
Cox and Hamon and Gorman-Yoakam, E. Robles 6, sec 68 (Hoffman)	65	2718
N. V. Duncan, Worden-Drought 15, survey 151 (Charamousca)	325	1526
H. and H. Drilling Co., J. F. Welder 1-A, 330 ft nl, 330 ft el, 100-ac lse, in sw part Samuel Alexander sur No. 102, between Seven Sisters and Gov't Wells fields	*	2658
Hiawatha O&G Co., Lillian Parr 2, San Andres grant (North Sweden)	350	4737
Humble, Roos Brothers 8, BS&F survey (Labbe)	25	2817
Lockhart Brothers, Atlee Parr 2, section 277 (Thomas-Lockhart)...	250	4786
Magnolia, Servando Benavides 32, sec 174 O'Hern & Seacord subd (Cole-O'Hern)	100	2868
Navarro Oil Co., T. H. Couling 1, blk 19, Sweden subd, Santos Flores grant (North Sweden)	425	4780
Nordan and Morris, Merle West 1, sur 10, Sweden subd, Santos Flores grant (North Sweden) ...	500	4774
Pan American, J. F. Welder Heirs 7-A, BS&F sur (Seven Sisters)..	550	2638
Rio Bravo Drilling Co., W. R. Peters 6-B, sur 29, (Rancho Solo)..	14	1845
Russ Pet. Co. et al, A. Farias, sec 9, Sweden subd, Santos Flores grant (North Sweden)	475	4826
Standard of Kansas, Mabel Rossi 8, blk 10, Sweden subd, Agua Poquita gr (North Sweden)	500	4799
Southland Life Ins. Co. 1, blk 12, Ball Ranch subd, Agua Poquita grant (North Sweden)	460	4775
Sun, Gasper Rodriguez 2, 1725 ft s'ly sl, 990 ft el of 421.7-ac lse, sec 222-1 and 222-2, J. C. King sur (Seven Sisters)	450	2818
JIM HOGG COUNTY—		
French Oil Corp., M. Vela 1, 3073 ft sl, 5280 ft el, sur 573, El Peyote grant	*	3887
McMULLEN COUNTY—		
Alabama Minerals Corp., Margaret Gordon 1, 330 ft sl, 330 ft el, sw¼ AB&M sur 127, 28 mi s of Tilden	*	2537
W. L. Hinds, Douglas W. Rhodes 1, 330 ft nl and el sec 54, H. Nadler sur, 17 mi s Tilden	*	2088
J. T. Lanier, E. R. Hagist 1, 330 ft nl, 330 ft wl se¼ of n½ sur 481, ¾ mile northwest Loma Alta field	*	2485
STARR COUNTY—		
Brickmer, Nelson, Clopton (John H. Clopton et al), Dionicio Tijerina 5, 330 ft sl, 660 ft wl, blk 12, share 14 "C", porcion 80.....	*	1412
Henry Mode et al, Starr County Cattle Co. 1, 330 ft nl and wl, blk 18, Jeffries Lambeth subd, por 88 (Barbacoas)	*	3007
Moss and Heard, S. B. Ricaby 5, 16,708 ft n of State Highway, 150 ft wl, porcion 83, J. of Camargo	*	1807
The Texas Co., A. M. Guerra, 500 ft sl, 3200 ft wl of sh 305-D in por 67, Juris of Mier (Roma)...	*	3653
WEBB COUNTY—		
Mills Bennett, D. G. Garcia 5, sur 337 (Killam)	82	2001
Bridwell Oil Co., Maria G. Martin 2, sur 2167 (Oilton)	450	1932
French Oil Corp., J. M. Garcia Est., 2010 ft nl, 890 ft el, n½ sur 1121, 1½ mi e Killam field.....	*	2100
Gypsy Oil Co., Maria G. Martin 4, sur 458 (Oilton)	125	2069
Maria G. Martin 5, sur 458 (Oilton)	265	1906

Company, Well and Location	Init. Prod. Bbls.	Depth
W. and R. Killam, Feliz Garcia 1, sec 337 (Killam)	¶10	2030
Eugene Mays et al, Robert Dickens 1, sur 1007 (Killam)	40	1993
Rowan and Hope, Laurel Bros., sur 1006 (Oilton)	225	1968
ZAPATA COUNTY—		
Dulup Oil Co., I. G. Trevino 27, sur 412 (Escobas)	25	1266
Fansler-Moore-Murray, Gopher Trust Est. 2, 150 ft nwl, 150 ft nel 40-ac lse, blk 12, sur 6, Fullerton subd, share 8, San Ignacio subd, J. V. Borrego grant	*	2235
B. W. Roscoe, C. Bustamante 21, share 33, Fansler Partition, Comitas gr (Escobas)	30	1215
C. Bustamante 22, sh 33, Fansler Partition, Comitas grant (Escobas)	20	1235
C. Bustamante 30, share 33, Fansler Partition, Comitas grant (Escobas)	25	1239
SAN ANTONIO DISTRICT		
BEXAR COUNTY—		
Earl M. Baker, E. M. Baker 3, F. Rolen sur No. 48 (Von Ormy)	4	671
Shadrock Oil Co., Juan Barragan 1, J. S. Simpson sur (Von Ormy)	4	660
CALDWELL COUNTY—		
McNeill Pet. Co., R. M. Martindale 1, McNeill sur, 800 ft swl, 150 ft sel of farm	*	1475
Padua Pet. Corp., W. J. Cooper 1, 250 ft el and rd, 200 ft nl of W. J. Cooper 53-ac lse, Seal sur	18	2650
Rio Bravo Oil Co., J. M. Merriwether 16, John Henry sur (Luling)	160	2109
Victory Oil Co. (Potter Pipe Line), R. Medlin 1, C. M. Cannon sur (Buchanan)	450	2245
COMAL COUNTY—		
John R. Yates, Erhard Heidrick 1, 3000 ft el, 4000 ft sel, 4500 ft sl, 1557-ac tr, A. M. Bolbrook sur No. 423	*	215
GUADALUPE COUNTY—		
J. Kenneth Blackmar & Atlantic Oil, Nora Huff et al 1, James Hodges sur (Darst Creek)	20	2505
Forest Development Corp., Martin Hoffman 3, Green DeWitt sur (Zoboroski)	100	2547
Magnolia, Annie Knodel 6, Joel Robinson sur (Darst Creek)	125	2578
WILLIAMSON COUNTY—		
David Kinsey et al, Joe Bachmeyer 1, Hamilton White sur (Byersville)	*	967
A. C. Schramm et al, A. Zieschang 1, Hamilton White sur (Byersville)	2	863
CORPUS CHRISTI DISTRICT		
ARANSAS COUNTY—		
Atlantic Ref. Co., W. G. McCampbell Ranch 5-C, James Orrick sur (McCampbell)	350	7120
Landreth Prod. Co., W. G. McCampbell Ranch 5-A, blk 39, McCampbell Ranch subd (McCampbell)	250	7131
Rutherford Oil Corp. et al, H. E. Yarborough 1, blk 37, McCampbell Ranch subd (McCampbell)	560	7133
Shasta Oil Co. and Pilsan Oil Co., Jean Davis 3, blk 9, McCampbell Ranch subd (McCampbell)	625	7136
BEE COUNTY—		
Transwestern Oil Co., Geo. A. Ray 1, Geo. A. Kerr sur (SW Pettus)	*	4354
Mills Bennett, W. W. Jones 1, 466 ft nl, and el blk 34, G. Sanchez sur	*	6005
Standard of Texas' Braulia Garcia 3, La Mestena y Gonzalena gr (Alta Mesa)	75	2555
CALHOUN COUNTY—		
Sinclair Prairie, W. H. Bennett 3, Agaton Sisneros sur (Heyser)	600	5749
HIDALGO COUNTY—		
Felmont Oil Corp. et al, Mayer & Weill 1, 1565 ft el, 1729 ft nl of n 200-ac of s 1002.5-ac of tr 1	*	5024
KARNES COUNTY—		
Dirks Brothers, E. Ruhmann 3, James Johnson sur (S. Burnell)	500	3612
Luling O&G Co., C. W. Boyce 3, W. J. Porter sur, (S. Burnell)	475	3641
Pettus O&R Co., Mrs. R. A. McKinney 2-A, R. C. Ballard sur (S. Burnell)	500	3653
KLEBERG COUNTY—		
Harry L. Edwards, Theresa Boetcher Noack 1, KT&I sur (Kingsville)	*	3535
NUECES COUNTY—		
C. Andrade, Fred Frank 8, CEIP&M sur No. 500 (Saxet)	110	6935
Bentex Oil Corp., Frank Harmon 3, sur 416 (Saxet)	650	5796
R. B. Bryant, Fred Frank 9, sur 416 (Saxet)	350	6961
Bryant & Howell, Anton Kocurek 2, J. Smith sur No. 25 (Saxet)	175	4240
Houston Oil Co., T. M. Harrell 7-A, blk 27, Sheppard Farm Lots	275	4407
Humble and Barnsdall, Kate Ritter 3-A, center lot 23, blk 55, Flour Bluff and Encinal Gardens tr (Flour Bluff)	*	6689
Southern Minerals Corp., Bessie Elder 5, GC&SF sur No. 311 (Saxet)	475	6741
Texon Royalty Co., J. J. Scoggins, GC&SF sur No. 315 (Saxet)	400	4902
REFUGIO COUNTY—		
Quintana Pet. Corp., Tom O'Connor 55-A, blk 55, J. M. Swisher sur (Tomoconnor)	2250	5951
United Prod. Corp., M. F. Lambert 61, blk 47, J. M. Swisher sur No. 7 (Tomoconnor-Greta)	900	5915
SAN PATRICIO COUNTY—		
Plymouth Oil Co., E. H. Welder 81-C, sec 70, Welder Ranch subd (Plymouth)	500	5492
Sun, D. I. Coggin 1, Coleman-Fulton Pasture Lands (Midway)	125	5539
VICTORIA COUNTY—		
Barnsdall and American Liberty, Pickering-Roos 22, SA&MG sur. No. 5, A-306 (Placedo)	750	4767
Haynes B. Owenby, T. P. Traylor 3, SA&MG sur No. 7 (Placedo)	500	4767
T. N. Development Co., Henderson & Pickering 1-B, J. M. Brownson sur (Placedo)	625	4769
Transwestern Oil Corp., A. M. McFaddin 1-E, 2640 ft el, 3200 ft nl of F. Lewers sur, A-255	350	4413

*Failures; †Junked; ¶Million cu. ft. gas.

TEXAS GULF COAST

Hitchcock is a new field in Galveston County.

* * *

Fourth producer completed in new Friendswood field.

Houston.—Hitchcock, Galveston County, was converted into an oil field last week when Maco Stewart completed Maco Stewart 1, J. Spillman Survey, flowing 60 barrels of 31 gravity pipe line oil daily from Miocene sands at 5156 feet.

Maco Stewart 1 was perforated with 24 holes from 5134 to 5140 feet, and on the first 24-hour gauge starting at 10 a.m. September 6, flowed 60 barrels through various size chokes from a ⅛- to a ¼-inch. September 7 on a 3-hour gauge it made 8 barrels through a ⅛-inch choke and showed a tubing pressure of 905 pounds and a casing pressure of 1375 pounds. On a 5-hour gauge it flowed 10.25 barrels through a ¼-inch choke.

However, other reports state that Maco Stewart 1 flowed from 10 to 15 barrels per hour through ¼-inch choke. But scouts who were at the well stated that it was making about 2 barrels per hour. While making a potential test the past week the oil was turned into the storage tanks and after the tank was partly full it broke and oil flowed over the location. Tanks are being repaired and another test will be made.

This well was drilled to 5156 feet and 5½-inch casing was set at 5153 feet. On an electrical logging device sand showing oil was logged from 5132 to 5139 feet, and according to the driller's log it was encountered from 5134 to 5141 feet. The well is located approximately 300 feet north of Shell Petroleum Corporation's Maco Stewart 1 which was drilled to 10,460 feet and abandoned after blowing out, after which the lease was surrendered.

On the Garwood prospect, Colorado County, Coyle Concord Oil Company's South 2, I&GN Section 41, was running tubing for a production test September 10. It is understood that the operator is testing 2 feet of sand showing oil. It was cored from 6032 to 6034 feet, and a drill-stem test showed 30 feet of 53.8 gravity oil and a 600-pound pressure in 7 minutes through ¼-inch chokes. Sterling Oil & Refining tested this sand in a well at Garwood and it showed only gas and distillate. According to those more informed, it is believed the Coyle Concord will get a gas and distillate well in South 2.

Hastings Extended Half Mile North

Hastings, Brazoria County, was extended ½ mile north last week when J. Simmon's Alexander 1 came in for an estimated 25 barrels of pipe line oil per hour through ¼-inch choke from Frio sands at 6070 feet. Top of the sand was logged at 5963 feet. The operators have skidded derrick over for Alexander 2.

Hastings continues to be the most active field in the Gulf Coast. Last week there were 12 completions reported, all being oil wells, and 10 wells are at completion stage, either waiting on cement or being washed in for production tests.

The fourth commercial oil producer for Friendswood, Harris County, was completed by V. H. Borsodie. His Ross 2 came in flowing 22 barrels per hour through ¼-inch choke with tubing pressure of 650 pounds and casing pressure of 950 pounds at 6099 feet. Top of the oil sand was logged at 6079 feet. The operator has skidded rig over to drill Berlowitz 1, T. Choate Survey.

Only One Failure in Texas Gulf Coast Last Week

Thirty-three completions recorded in the Texas Gulf Coast last week showed only one failure. This failure was The

Texas Company's Kuhn 12, semi-wildcat ½ mile southeast of production at Port Neches, Orange County. Kuhn 12, J. Beaumont Survey, was dry at 7007 feet after encountering a slight showing of oil from 6773 to 6776 feet.

The other 32 completions in this district last week were flowing oil wells. Hastings and Amelia lead the list.

Longest String of 7-Inch Casing Set at Old Ocean Field

The longest string of 7-inch casing ever set in the Texas sector of the Gulf Coast was landed by Harrison & Abercrombie at Old Ocean, Brazoria County. The interest's C. Larson 1, 1 mile northeast of production, C. Breen Survey, was down to 10,751 feet in sand showing oil and was waiting on cement to set at the end of the week. Sand and shale showing oil has been logged from 9577 to the bottom. A production test will be made the coming week, and if it yields commercial oil from 10,751 feet it will be the third deepest producing well in the world. The two deepest producing wells are at Lirette field and Horseshoe Bayou field, Louisiana Gulf Coast.

West of production at Lochridge, Brazoria County, Shell Petroleum Corporation completed Ramsey State Prison Farms 1, J. W. Hall Survey, at 6374 feet, flowing 118 barrels in 12 hours through ¼-inch choke with tubing pressure of 150 pounds and casing pressure of 600 pounds. The oil tested 26.3 degrees.

E. J. McCurdy Jr. has made location for State 1, 50 feet from the south bank of the Brazos River and 790 feet from Gulf Oil Corporation's Wood 1 and 2. He has leased the surface rights on a 1½-acre tract upon which to erect derrick for State 1. The hole will be whipstocked every 1000 feet to reach the sand under the Brazos River.

Spurger May Get New Producing Horizon

A new producing horizon may be opened at Spurger, Tyler County, in Republic Production Company's Hurd 4, 933 feet south of Hurd 3, N. Hurdy Survey. Last week the company was preparing to perforate liner in sand showing oil from 7000 to 7005 feet. Seventy feet of 5-inch liner was set onto the 7-inch casing at 7635 feet. A test will be made the coming week.

Northeast of Rockland, Tyler County, Thompson Drilling Company announced location for Kountz 1, 1100 feet south of Neches River and 300 feet west of the east line of E. Smith Survey, Abstract 792.

In Madison County, Faucett & Kyle made location for D. C. Cannon Heirs 1, 6 miles northwest of Madisonville, 3960 feet east of the west line and 4490 feet south of the north line of 16½-acre tract in the John P. Phillips Survey.

On the west side of Segno, Polk County, La Quinta Oil Company completed Wing 7, I&GN Section 15, in the 5246-foot sand. After setting 7-inch casing at 5239 feet, the well came in flowing 695 barrels of pipe line oil daily through ¼-inch choke with tubing pressure of 1450 pounds and casing pressure of 1900 pounds.

Gulf Oil Corporation's Wing 8, south of production at Segno, made a drillstem test in a new sand and was drilling below the sand at 5526 feet last week. The test was made from 5510 to 5521 feet through ⅜-inch chokes and showed a 650-pound pressure and some distillate in 10 minutes.

Shell Petroleum Corporation completed its first well at Hardin, Liberty County, last week. Cessna 1 made 20 barrels per hour through ¼-inch choke with tubing pressure of 780 pounds and casing pressure of 780 pounds from 7608 feet. The company has made location for Cochran 1.

Strake Petroleum Company entered Hardin field by announcing location for W. T. Finley 1, 660 feet south and 330 feet east from the northwest corner of a 198-acre tract in the H. B. Johnson Survey.

Southwest of production at Seabreeze, Chambers County, Sun Oil Company made a drill-stem test on F. Jackson 1, A. Yborbo Survey, and showed 43 barrels of salt water and mud. The test was made in 45 minutes from 8550 to 8582 feet.

At Bammel in Harris County, Superior Oil Producing Company completed Butler 1, J. Ehrhardt Survey, as a gas well. Casing was perforated from 6170 to 6175 feet and Butler 1 came in making 4,000,000 cubic feet of gas daily through 9/64-inch bottom and ¾-inch top choke.

Appoint housing committee for oil show visitors

A housing committee has been created by the chamber of commerce to take care of visitors to the Oil-World Exposition which will be held in Houston, Texas, from October 11 to 16, inclusive. A number of the leading hotels are completely filled up with reservations for the week of the exposition, although some of the larger hotels are still accepting reservations.

The committee will list all the smaller hotels and private residences which can accommodate visitors and will have available prices and other data to facilitate the placing of guests.

TEXAS GULF COAST Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
AMELIA—		
Humble, Crook 7	658	6778
Phelan 9	650	6775
Tyrell Combest 13	548	6782
ANAHUAC—		
Humble, Gripon 13	531	7120
ESPERSON—		
General Crude, Sun Oil Co. 2	200	3302
FRIENDSWOOD—		
V. H. Borsodie, Ross 2	528	6099
HARDIN—		
Shell, Cessna 1	480	7608
HASTINGS—		
Humble, Alexander 1	600	6080
Brown 16	360	6118
Brown B-7	432	6060
Haden 6	384	6115
Wood 1	648	6080
J. Simmons, Alexander 1	600	6070
Stanolind, Ford 12	600	6080
McKibbon 3	744	5795
S. Paul 14	611	6104
S. Paul 16	600	6080
Schaefer 2	386	6080
Wooster 5	528	6080
HULL—		
Houston Prod. Co., Texas Co. 2	307	5662
J. Mecom, Taylor 4	182	3700
LOCHRIDGE—		
Shell, Ramsey State Prison Farms B-1	236	6374
MAGNET—		
Atlantic, Cockburn 3-B	105	5542
MANVEL—		
Texas Co., Morrison 3	606	5680
MARKHAM—		
C. G. Hamil, Hudson 3	69	3637
PORT NECHES—		
Texas Co., Kuhn 12	*	7007
SEGNO—		
La Quinta, Wing 7	695	5246
SOUTH HOUSTON—		
Stanolind, H. L. Bennett 2	120	4068
SPINDLETOP—		
Stanolind, McFaddin 147	266	3905
TOMBALL—		
Humble, Schultz A-4	500	5563
Thomas 1	525	5564
TURTLE BAY—		
Stanolind, Cooper 2	620	6603
Sun, C. J. Chambers 6	536	536

*Failures; †Junked; ¶Million cu. ft. gas.

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SOUTH LOUISIANA

Wildcat north of Villa Platte may yield Sparta oil.

* * *

Gulf sure to have new field at Timbalier Bay.

Lake Charles.—Continental Oil Company's Felonie Tate 1, wildcat north of Villa Platte, Section 44-3s-2e, Evangeline Parish, set seven-inch casing at 9100 feet to test 60 feet of broken formation showing oil from 8970 to 9030 feet in Sparta formation. Not only does this wildcat indicate that it will open a new oil field in South Louisiana area, but it may produce from formation which has never produced in the district.

If this well produces from Sparta formation it will revive drilling along the Conroe trend in this area, and blocks which heretofore have not produced, but have shown evidence of structure by geophysical work, will probably be leased again for deeper drilling.

Other Areas to Go After Sparta

Continental Oil Company's Tate 1 is due south of Cheneyville, Rapides Parish, the first field in South Louisiana to produce from Cockfield formation. Sparta production is possible in this field, considering the showing of the Evangeline Parish wildcat.

Wells which have been drilled to the Cockfield or upper formations along this trend probably will be worked over and carried down to the new formation.

Timbalier Field Assured

It is only a matter of time until Gulf Oil Corporation opens a new field at Timbalier Bay, Lafourche Parish. Last week another drill stem test on State PP 3, Section 36-23s-21e, southwest of Marchland salt dome, showed 2520 feet of 31 gravity oil. This is the second drill stem test made on the wildcat which has showed oil. The first, at 6749 feet, showed 1000 feet of 32 gravity oil. Drilling below 7100 feet, the wildcat will be carried down to an undetermined depth. Then the hole will be plugged back and given a chance to produce.

On the east flank of Edgerly, Calcasieu Parish, Louisiana, Crusader Oil Company's Miller Brothers 1, Section 27-9s-11e, was being completed last week. The extension well cored sand showing oil from 6078 to 6082 feet and seven-inch casing was cemented at 6067 feet. If the well is a producer it will be the first for the company in this district.

Humble Oil & Refining Company recovered salt water on a series of tests on Federal Land Bank 1 in Acadia Parish and prepared to test sands from 8394 to 8400 feet. Last week casing was perforated from 8620 to 8630 feet, 8610 to 8620 feet, 8370 to 8384 feet, and from 8394 to 8404 feet. All the perforations showed salt water, and cement was squeezed through the holes. The last test from 8394 to 8404 feet showed 368 feet of gas cut mud; 276 feet of oil and mud; 360 feet of oil and gas; and 2024 feet of salt water. A test was attempted from 8394 to 8400 feet but it failed.

To Work Over World's Deepest

The deepest producer in the world will probably be worked over again. Humble Oil & Refining Company Ellender 1, discovery well at Lirette field, Section 23-19s-19e, Terrebonne Parish, was given another production test last week and showed 575 barrels of fluid (288 barrels of net oil) through a quarter-inch choke. Tubing pressure was 2000 pounds. Ellender 1 was completed at 11,621 feet.

Two wells in the Louisiana Gulf Coast which are projected to 13,000 feet were drilling last week. Continental Oil Company's Brookshire 1, Abbeville area, Vermilion Parish, was down to 11,661 feet. The Texas Company's State Bayou Norman 1, east of production at Lafitte field, Jefferson Parish, was drilling shale at 11,100 feet.

Shallow Sand at Charenton

A new shallow producing sand was found at Charenton field, St. Mary Parish, when Pan American Produc-

SOUTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BIG LAKE—		
Union Sulphur Co., H. Hebert 1..	100	9060
CHARENTON—		
Pan American, Veeder-Hunt 1, dr to 6305 ft, pb to 3960 ft.....	240	3948
GARDEN ISLAND—		
Texas Co., Garden Island Bay 22..	652	5061
IOWA—		
Shell, Heyd 28	360	5075
JENNINGS—		
D. D. Feldman, McFarlan 1	840	6802
ST. MARTINVILLE—		
Tide Water, Smedes 5	*	5682
TEPETATE—		
Continental, Vincent Welch 2.....	153	8309
VALENTINE—		
Pan American, Harange 8, dr to 7508 ft, pb to 3951 ft.....	584	5420
PLAQUEMINES PARISH—		
Humble, Orleans Levee Board 5, Potash salt dome, 12-18s-15e....	*	947

*Failures; †Junked; ¶Million cu. ft. gas.

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tion Company's Veeder-Hunt 1, Section 30-13s-10e, came in flowing 10 barrels of pipe line oil per hour through a quarter-inch choke with a tubing pressure of 275 pounds and a casing pressure of 50 pounds from 3948 feet. Casing was perforated at 3940 to 3948 feet. Pan American Production Company has another well, Veeder 1, which may produce from a still shallower new sand. The company was preparing to perforate casing from 2590 to 2600 feet.

At South Roanoke, Jefferson Davis Parish, Union Sulphur Company's T. R. S. Farms 1, Section 23-10s-4w, was fishing at 8614 feet after making a test which showed salt water. Last week casing was perforated from 8610 to 8604 feet with 28 holes, and salt water was recovered. No pressure was shown.

New Sand at Big Lake

The second oil producer for Big Lake field, Cameron Parish, has completed a new producing horizon. Union Sulphur Company's H. Hebert 1, Section 18-12s-8w, was completed after perforating casing with 41 holes from 9040 to 9060 feet. It came in flowing 100 barrels of oil daily through ¼-inch choke with a tubing pressure of 350 pounds. The oil was showing 3 percent basic sediment and water.

Union Sulphur Company's P. Hebert, Section 18-12s-8w, Big Lake field, showed 50 stands of salt water after casing was perforated with 27 holes from 8383 to 8385 feet. The hole was plugged back and was perforated with 18 holes from 8337 to 8340 feet, and last week the crew was preparing to make a drill stem test.

A new depth record has been established in Lake Hermitage field, Plaquemines Parish. Gulf Oil Corporation's Lafourche Levee Basin District 7, Section 12-18s-25e, drilling below 7680 feet in water sand, is the first well in the field to drill beyond 7000 feet.

Another Potash Failure

Another failure was reported at Potash salt dome Plaquemines Parish, Section 12-18s-15e, when Humble Oil & Refining Company quit Orleans Levee Board 5 at 947 feet. The well showed two ohms and 18 milivolts on an electrical logging device from 670 to 680 feet. A gas sand was logged at 775 feet.

Northwest of Starks in Calcasieu Parish, D & D Oil Company's Lutcher Moore 2, wildcat in Section 1-8s-13w, was down to 8128 feet in shale and was showing gas on ditch. Lutcher Moore 1 tried to blow out several times while drilling.

Louisiana geology

Geology of Catahoula and Concordia Parishes, published by the Department of Conservation, Louisiana Geological Survey, New Orleans, is another of a series dealing with Louisiana geology. It was prepared by W. D. Chawner, geologist, research division of the Louisiana Geological Survey and the Louisiana State University. It was prepared under the supervision of Henry V. Howe, director of the school of geology of Louisiana State University and director of the research division of the Louisiana Geological Survey.

Catahoula and Concordia are adjoining parishes located in east central Louisiana. The area lies largely in the Mississippi Flood Plain or Alluvial Valley. The flood plain is covered with recent river sediments.

Asphalt Congress opens

Glacier National Park, Montana.—The National Road Oil and Asphalt Congress, held at Tulsa for the past 6 years, opened here September 7 in conjunction with the Montana National Bituminous Conference. Tulsa delegates to the convention included A. V. Borque and G. E. Everett of the Western Petroleum Refiners Association, and Emby Kaye, Skelly Oil Company.

To hold soil corrosion meeting in Houston

Houston.—K. H. Logan, of the United States Bureau of Standards, will head a meeting that is to discuss the soil corrosion of buried pipe. The meeting is to be held in Houston, at the Chamber of Commerce auditorium at 1:30 p. m. September 23, and is open to anyone desiring to attend. The meeting will be similar to one being held in Los Angeles, and Logan is expected to come to Houston with some new data from Pacific Coast research work.

In addition to the discussion by Logan and an open forum, it is planned to have two papers presented by men located in the Gulf Coast. The latter have not been definitely selected as yet.

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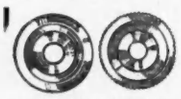

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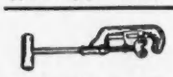

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Safest and most serviceable because of quality steel and replaceable parts. Trimo Chain Wrench is a leader in its field.

Arkansas extension still leads Rodessa work.

* * *

Lisbon adds nine new producers during week.

Shreveport. — The recently opened Miller County, Arkansas, extension of Rodessa which now has 11 producing wells, adding two during the last week, leads all other parts of Rodessa with 20 tests drilling, one test rigging and seven active locations and derricks. Freeman W. Burford has nine active operations in that offshoot.

Burford last week re-completed A. A. Capps C-1, CE½ W½ 14-20-28, which gauged 290 barrels of 58.8 distillate in 24 hours and 6,000,000 cubic feet of gas daily through 7/16-inch choke, from 6085 feet. Log of this well shows that saturation in the Gloyd-Mitchell horizon was logged at 5988 to 6030 feet and from 6044 to 6055 feet; elevation is 294 feet.

The other completion was W. L. McClanahan's A. A. Capps 2, SWc 11-20-28, which flowed and swabbed 100 barrels in 24 hours after being treated with 4000 gallons of acid. This test topped the Gloyd at 5972 feet, logged Mitchell sand at 6012 to 6018 and saturated lime from 6029 to 6046 feet. Total depth is 6061 feet; elevation is 251 feet.

In the northeast end of the Louisiana side of Rodessa, Blackwell Oil & Gas Company's Neugent 3, NE SE 8-23n-15w, which was drilled into the Travis Peak to 7207 feet and plugged back to 6750 feet, was completed in the Petitt (Basal Glen) flowing five barrels of oil and two barrels of salt water daily. Petitt was topped at 6653 feet and 5-inch casing was cemented at 6644 feet. It is the first commercial production from the Petitt in Rodessa.

Jefferson Rodessa adds third oil producer

Shreveport.—The Jefferson offshoot of the Rodessa field in Marion County, Texas, added its third oil producer last week when Holcomb and Thomasson completed Lizzie Henderson A-1, R. Bennington Survey, at 6050 feet flowing 680 barrels in 24 hours through ½-inch tubing choke with casing pressure 1200 pounds and tubing pressure 600 pounds. The well is producing from 18 feet of Gloyd saturation topped at 6030 feet.

The Henderson sand was logged from 6011 to 6025 feet with the upper seven feet showing gas and distillate and the lower seven feet showing oil. Then a 5-foot shale break occurred before Gloyd was topped. Seven-inch casing was cemented at 6027 feet shutting off the Henderson horizon. Elevation was 270 feet.

The Lodi offshoot of Rodessa, also in Marion County, did not fare so well during the week. Arkansas-Louisiana Gas Company's J. P. Fant 1, L. P. Cadenhead Survey, swabbed oil and salt water at 6178 feet and was plugged back to 6158 feet for another test in an effort to shut off the water.

The Hunter Company's E. W. Fonda 3, Santos Coy Survey, which logged the Henderson sand at 6127 to 6149 feet, after being treated with 2000 gallons of acid at 6151 feet when swabbed down 3000 feet showed 28 percent acid and salt water and estimated 10 percent basic sediment and will be deepened to the Gloyd coquina lime. In the same nose of the field, Mid-Continent Petroleum Company's Sory 2, Santos Coy Survey, which logged Henderson sand from 5992 to 6010 feet and then hit the Gloyd, when tested made a head of oil and then started to making wet gas at an estimated rate of 66,000,000 feet daily. Five and one-half-inch casing will be cemented in an effort to cut off the gas.

Marion County has 15 active operations. Seventeen active tests are under way in the Cass County, Texas, side of Rodessa.

49 wells on Texas side of Rodessa show b.h.p. drop

Shreveport.—Forty-nine of the sixty-nine key wells tested on the Texas side of Rodessa during August showed declines in bottom hole pressures but the downward curve of bottom hole pressures was not so pronounced as in previous months. Seven wells in Marion County had pressures taken for the first time.

Cotton Valley lower Marine gets seventeenth producer

Shreveport.—The lower Marine horizon at Cotton Valley, Webster Parish, added its seventeenth gas-distillate well last week when Magnolia Petroleum Company completed A. J. McCook 2, SW SW 22-21n-10w, at 8293 feet flowing 277 barrels in 11 hours through three-eights inch choke, with a tubing pressure of 2400 pounds and casing pressure, 2750 pounds.

Fourteen wells from the lower Marine at Cotton Valley had produced a total of 362,171 barrels of oil to August 1, 1937. The production to August 1 was divided among companies as follows: Magnolia Petroleum Company, three wells, combined accumulated yield, 96,516 barrels; Ohio Oil Company, seven wells, combined yield, 171,019 barrels; United Gas Public Service Company, two wells, 47,147 barrels; and Woodley Petroleum Company, two wells, 48,489 barrels.

Besides this, Ohio Oil Company's R. L. Holloway 6, Section 23-21n-10w, the lone Travis Peak horizon producer had yielded to that time a total of 178,411 barrels.

Lisbon has biggest week in its history

Shreveport.—Lisbon had its largest week in its 8½ months of history during the 7-day period ending September 8 when this basal Glen Rose lime field accounted for nine new producers with seven others testing. This field has 44 active operations under way.

Six wells in Lisbon to date have had pumping units installed, three of which are used more to agitate than to lift. Gulf Oil Corporation's S. E. Tatum, an edge well to the east was standardized after two acid treatments of 4000 and 5000 gallons failed to make it flow and it pumped 95 barrels of oil in 24 hours from 5303 feet, after logging porosity 5283 to 5295 feet, about the average porosity for nearby wells.

A slight extension to the northeast was provided when Vaughn & Marr completed E. B. King 1, CS½ SE SE 30-21n-4w, flowing 50 barrels per hour through 56/64-inch tubing choke from

NORTH LOUISIANA Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
BIENVILLE PARISH (Bisteneau) —		
DeSoto O&G Co., Ashley 1, 15-16n-10w	¶25	5650
CADDO PARISH (Rodessa)—		
Blackwell O&G Co., Neugent 3, 8-23n-15w	5	7207
CLAIBORNE PARISH (Lisbon)—		
Atlantic Ref. Co., J. T. Bean 2, 31-21n-4w	1296	5202
Gulf, S. E. Tatum 1, 32-21n-4w	95	5303
Love Bros., Henry 2, 31-21n-4w	480	5175
Olsen Drlg. Co. et al, Patton B-1, 29-21n-4w	175	5150
Scout Oil Corp., English 1, 30-21n-4w	504	5215
Sloan & Zook, H. W. & M. Patton 1, 1-20n-5w	168	5287
J. C. Tippett et al, Aycock 2, 1-20n-5w	1080	5387
Vaughn & Marr, E. B. King 1, 30-21n-4w	1200	5130
LINCOLN PARISH (Lisbon)—		
Hollyfield & McFarlane, J. D. Carruthers 1, 6-20n-4w	1080	5347
LINCOLN PARISH (Ruston)—		
Lide, Greer et al, Causey 1, 32-19n-2w	¶60	5822
WEBSTER PARISH (Cotton Valley)—		
Magnolia, A. J. McCook 2, 22-21n-10w	519	8293
BOSSIER PARISH (Bellevue)—		
Arkansas Fuel Oil, Bodcaw Lbr. Co. B-16, 11-19n-11w	15	428
CADDO PARISH (Pine Island)—		
Stanolind, Dillon Hrs. 125, 14-21n-15w	50	1732
DE SOTO PARISH—		
E. M. Harter, F. Giaque 1, 26-11n-11w	*	2918
OUACHITA PARISH (Monroe)—		
Carbons Consolidated, Fee 12, 35-19n-3e	¶2	2279
J. & H. Oil Co., Frost Lbr. Co. A-6, 36-19n-3e	¶1	2182
H. L. Woods, Union Power Co. 2, 17-19n-3e	*	2297
SABINE PARISH (Converse)—		
Producers O&G Co., Lynch 1, 29-9n-13w	*	2039
UNION PARISH (Monroe)—		
J. & H. Oil Co., Union Power Co., C-2, 16-21n-3e	¶1	2200
Southern Carbon Co., Grayling 21, 20-21n-4e	¶11	2131

*Failures; †Junked; ¶Million cu. ft. gas.

5130 feet after logging porosity from 5111 to 5127 feet, with elevation of 221 feet.

Lisbon Oil Company (J. B. Bond et al) was testing Burgess 1, NE SE NE 3-20n-5w, two miles west of production, after plugging back to 5325 feet from old total depth of 5800 feet, and setting 5½-inch casing at 5276 feet.

J. R. Bevill and associates' Alex Edmonds 1, NE NE 16-20n-5w, three miles southwest of Lisbon continued to install pumping unit with 2500 feet of oil in the hole; total depth is 5413 feet in basal Glen Rose lime.

One mile south of production R. Hal Compton of Fort Worth, Texas, made location for T. M. Kilgore 1, NE NE 12-20n-5w.

Lincoln Parish wildcat produces wet gas

Shreveport. — Another basal Glen Rose lime wet gas producing area appeared to have been opened last week in the North Louisiana Basin when Lide, Greer and associates' Causey 1, NW NE NW 32-19n-2w, Lincoln Parish, 17 miles from nearest production, was completed making an estimated open flow of 60,000,000 cubic feet of wet gas daily. Rock pressure was 2150 pounds.

This test, taken over at the 4600-4700-foot level by these operators from Arkansas-Louisiana Gas Company and deepened to the Travis Peak at 5822 feet, was plugged back to basal Glen Rose and after 5-3/16-inch casing was cemented at 5304 feet the 7-inch casing was perforated with 16 shots at 5316 to 5328 feet and the well completed; elevation was 341 feet. It was shut in for exact gauge. It will be operated by the Arkansas-Louisiana Gas Company which owns the Glen Rose lime and Travis Peak gas-distillate producers in the Simsboro field in Section 10-17n-4w of the same parish.

Lincoln Parish wet gasser increases leasing in basin

Shreveport.—Completion of a new basal Glen Rose wildcat wet gasser in Lincoln Parish last week by Lide & Greer in Causey 1, Section 32-19n-2w, has added impetus to wildcat leasing in the north Louisiana basin.

In Jackson Parish, centering around Section 9-17n-2w, William C. Durant and associates have been actively leasing. Hunt Oil Company has been leasing in Lincoln Parish, taking several tracts in Township 19 north, Ranges 2 and 3 west. Magnolia Petroleum Company has been leasing in Township 20 north Range 2 west of the same parish. Gulf Oil Corporation following the east "trend" from Lisbon has taken 80 acres in Section 2-20n-4w.

Several companies have been leasing recently in the Lake Bisteneau district, Bienville Parish, in Townships 15 and 16 north, Ranges 9 and 10 west, Stanolind Oil &Gas Company being the latest, adding 400 acres in Sections 19 and 30-16n-9w. It is reported that Standard Oil Company of Louisiana may farm out for drilling a 13,000-acre block it has around Township 18 north, Range 6 west, Bienville Parish.

In Red River Parish, Shell Petroleum Corporation has been adding to its block around Township 12 north, Range 8 west. Gulf Oil Corporation has bought over 1000 acres around the block of C. E. Murdock in Township 21 north, Range 3 west, Union Parish. Northwest of the East Carroll Parish gas field and across the line in West Carroll Parish, Phillips Petroleum Company has been leasing recently in Township 20 north, Range 10 east.

Government sells leases in Rodessa field

Shreveport.—Leases on 206.04 acres of United States government land in the Rodessa field, Louisiana side, were sold at public auction in Shreveport September 3. Shell Petroleum Corporation paid $1025 per acre for 39.95 acres in 3-23n-16w, and $775 per acre for 138.13 acres in 9-23n-16w, Caddo Parish. G. G. Nesbitt paid $50 per acre for 27.96 acres in 2-23n-16w. No bids were offered for 28.93 acres in 5-23n-15w. The sales were handled by Hale B. Soyster, chief of the oil and gas leasing division, United States Geological Survey, by the Department of the Interior. He was assisted by Foster Morrell of Tulsa, acting supervisor of the Mid-Continent department, oil and gas leasing division, of the geological survey.

Standard Oil Company of Louisiana last week bought from Rodessa Oil & Land Company 273.28 acres in the Caddo Parish part of the Rodessa field, located as follows: E½ NE 10-23n-16w, 113.28 acres in NW¼ 6-23n-15w, and 80 acres in SW NW and NW SW 11-23n-16w, all for $27,328 cash and $93,984 from production.

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Lake Charles—Houma—Converse
New Iberia—Rodessa—Monroe—Cotton Valley—Turnertown—Greggton—Houston

Louisiana issues 28 permits for new wells

Shreveport. — Twenty-eight drilling permits were authorized last week by the minerals division, Louisiana Conservation Commission. Seventeen were for North Louisiana, divided among the following parishes: Bossier, two; Caddo, two, including one in Rodessa; Claiborne, three, all in Lisbon; La Salle, one; Lincoln, one, in Lisbon; Morehouse, one; Ouachita, three; Red River, two; and Union, two. The 11 in south Louisiana were divided among the following parishes: Acadia, three; Calcasieu, one; Cameron, two; La-Fourche, one; Plaquemines, one; St. Charles, one; St. Martin, one; and Terrebonne, one.

Shreveport.—Joe Modisett started moving in materials last week for a proposed 7000-foot test on a 3000-acre block of leases in Union Parish, Louisiana, in the southeast "trend" from Schuler, Union County, Arkansas, west of the Monroe Uplift. The location is Frost Lumber Industries 1, NE SW 14-21n-1e. A shooting picture indicated a "high" at this point and this was borne out by sub-surface geology worked out on top of the chalk.

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ARKANSAS FIELDS

Big Lime shows production in Schuler field test

El Dorado, Ark.—Indications that the Big Lime will produce in the lenticular Schuler field, Union County, Arkansas, was given last week when Edwin M. Jones' Marine Oil Company 1, NW SW SE 17-18-17, logged 51 feet of formation showing oil immediately above present total depth of 7615 feet where hole is being reamed down preparatory to setting casing. Elevation is 238 feet.

In a core from 7576 to 7596 feet the recovery showed 5½ feet of soft sand with thin silica streaks; 2 feet of porous sand, 1 foot of tight sand 6½ feet of mediumly fine-grained sand which was porous, with 2½ feet of tight silty sand. The entire core having satisfactory saturation.

In a core from 7596 to 7615 feet 10 feet of medium-grained sand was recovered immediately above 2½ feet of gray sandy shale, slightly calcareous and a like amount of hard crystaline sand with dead oil, underlain with 3½ feet of gray calcareous sandy shale.

Micaceous material that appeared in small quantities throughout the 51-foot horizon was found under a microscope to be dolomite, which indicates to some geologists that a shore-line type trap is present.

In a drill-stem test from 7545 to 7576 feet, the well started flowing 30.5 gravity oil after the first seven thribbles of pipe had been broken down after testing tool was opened 10 minutes, with ¼-inch chokes used at top and bottom. The oil shows a gasoline content of 21.5, a kerosene content of 12 percent and 1 percent sulphur.

Schuler has had 13 wells completed in five lenses occurring from 5559 to 6200 feet but water encroachment had occurred in some of the wells. August production totals for these wells was 171,572 barrels.

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Four of Arkansas permits for Rodessa extension

El Dorado.—Seven drilling permits were authorized last week by the Arkansas board of conservation. Four were in the Rodessa field extension in Miller County. The permits follow:

Columbia County—Tide Water Associated Oil Company, C. M. Crumpler 1, C SW NE SW 24-17-19.

Miller County—Hunt Oil Company, Mabel Ann Womack 3, 330 feet south and east NWc south half SE 10-20-28; W. L. McClanahan, Capps Brothers B-1, 330 feet south and 660 feet east NWc SW SW 12-20-28; Capps Brothers 4, 345 feet west and 660 feet south NWc east 30 acres of NW SE or 660 feet south and 15 feet west NEc NE SW 11-20-28; Capps Brothers 5500 feet east and 165 feet south NWc SW SW 11-20-28.

Nevada County—Benedum and Trees Oil Company, Grove Land and Timber Company 10, C SE NE NW 10-14-20.

Ouachita County — Benedum and Trees Oil Company, G. W. Slaughter 1, 1320 feet south and 300 feet east NWc 24-14-19.

ARKANSAS

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
MILLER COUNTY (Rodessa)—		
Freeman W. Burford, A. A. Capps C-1, 14-20-28	¶6 & 290	6085
W. L. McClanahan, A. A. Capps 2, 11-20-28	100	6061
ASHLEY COUNTY—		
Phillips Pet. Co., Stillions Lbr. Co. 1, 18-17-9	*	5615
NEVADA COUNTY (Troy)—		
Benedum & Trees Oil Co., Fincher 1-A, 10-14-20	230	2141

*Failures; †Junked; ¶Million cu. ft. gas.

Kerlyn to drill 6300-foot test in Columbia County

El Dorado.—Kerlyn Oil Company of Oklahoma is reported to have taken an interest in the block assembled by J. R. Tolbert, Jr., around Section 14-17-20, Columbia County, and will drill the 6300-foot test planned thereon. A. G. Oliphant of Minden, Louisiana, who has extensive interests at Cotton Valley, Louisiana, is said to have acquired an interest in the block.

In the same county, E. O. Olds has been leasing around Section 14-17-21 for a proposed 5000-foot test, and Lion Oil Refining Company has been taking leases in Township 19, Ranges 19 and 20. Robert Bowles and associates have 3000 acres in this township and these ranges.

Sun Oil Company recently leased over 1000 acres in LaFayette County around Townships 18 and 19, Range 24, where The Texas Company has also been taking some leases.

In Calhoun County, J. M. Hayner and associates of Shreveport have assembled an 8000-acre block around Section 35-11-13, for a 3000-foot test. In Ouachita County there has been leasing in the lower part of Township 14, Range 18.

SOUTHEASTERN STATES

Mississippi wildcat starts are widely separated

Jackson, Miss.—Two new wildcat locations were made in two widely separated parts of Mississippi. In Franklin Parish, southwest Mississippi, Fred E. Courson and associates were moving in materials for Homochitto Lumber Company 2, located 300 feet north of center of Section 18-5n-3e. E. R. Owen of Jackson is drilling contractor. Companies owning spreads in the block are: Texas-Gulf Coast Company, Humble Oil & Refining Company, Phillips Petroleum Company, Texas Crusader Oil Company, Bradford Petroleum Company, and Kirby Petroleum Company. It will be a 5000-foot test.

In Yalabousha County, north Mississippi, Acme Holding Company has derrick up and is rigging for S. D. Boyle 1, NW NW 33-25n-7e.

Mobile, Ala.—Joe Modisett and associates' 8000-foot test on the Hatchetigbee anticline in Choctaw County, Alabama, was drilling in Tuscaloosa (Woodbine) red beds at 4050 feet last week. While exact top of Tuscaloosa has not been determined by paleontologists, it was around 3500 feet; elevation is 120 feet. Eutaw (Ozan) was logged at 2913 feet, and Selma chalk at 1865 feet.

Companies owning spreads in Modisett's 30,000-acre block include: Phillips Petroleum Company, United Gas Public Service Company, Magnolia Petroleum Company, Southern Natural Gas Company, Kerlyn Oil Company, Superior Oil Company, Texas Company, and Sun Oil Company.

What a Doubting Thomas learned about the "Moly" shovel

(HOW AN ADVERTISING COPY WRITER WAS CONVINCED)

This is not a testimonial, but an unembellished experience of my own.

In preparing an advertising campaign for the WOOD'S (Moly) Shovel, certain facts were given me about the shovel's stamina that I frankly questioned. Even with my knowledge of the added strength of molybdenum steel, I found it hard to believe such things as a ten ton steam roller passing over the shovel without flattening it . . . as a sharp steel electric drill breaking when attempting to bore holes in the blade.

I voiced my doubts to the Sales Manager and was immediately taken in hand.

He took me into the factory, picked up the first WOOD'S (Moly) that was handy and with all his might crashed it blade first into a cast-iron door casement. He might as well have driven it into butter, for nary a mark appeared on the shovel. (The iron casement didn't fare as well).

Next, he put the blade into a vise and bent it ninety degrees. The shovel snapped right back into its original shape. Altogether he gave that

(Moly) Shovel one of the most thorough beatings I have ever witnessed, chipping up cement floors, chopping timber, and what have you. When he finished there wasn't a mark on the shovel, not even the slightest dent. It was still as good as new.

Even though I saw these things with my own eyes, it seems incredible that a piece of shovel steel can be so tough. I understand now why the WOOD'S (Moly) with its molybdenum steel blade has actually proved that it outlasts five ordinary shovels. And to shovel purchasers this fact should point the way to definite economies on their shovel bills.

Take it from one who has seen, this WOOD'S (Moly) Shovel is unique, both in wearing and lasting qualities . . . well worth anyone's time to write for complete details. Just address THE WOOD SHOVEL AND TOOL COMPANY, Piqua, Ohio.

WOOD'S Moly SHOVELS

REG. U.S. PAT. OFF.

NEW MEXICO

Completing third well in isolated Vacuum pool.

* * *

Operations in Lea County register sharp decline.

Hobbs.—The third oil producer for the Vacuum pool, Lea County's only isolated lime area, was in process of completion last week. Magnolia Petroleum Company's State-Broges 2, C SW SE 14-17s-34e, about ½ mile southwest of the company's discovery well, developed 1000 feet of oil in the hole from the top of the first pay section of the Permian lime at 4453 feet. This first oil showing is about level structurally with the original well, which was completed in July, 1929, flowing 177 barrels after a shot in the main lime at 4602-4900 feet. Production was extended ¾ mile to the southeast last May when Magnolia Petroleum Company's State 1-G pumped and flowed 268 barrels initial after nitro shots and acid treatments. The company holds lease on 5281 acres in the area.

A rig has been moved in by a contractor to drill The Texas Company's State 1-L, C SW NE 1-18s-34e, about 3¼ miles south of nearest production in the Vacuum area.

Only Three Locations

Operations in Lea County registered a sharp decline the past week, with only 3 locations authorized. There were 11 completions, including two gassers, and Eunice field failed to contribute a new well for the first time in several years. The new projects offset production in three areas. Repollo Oil Company's Roach 4, NW NW SW 21-20s-37e, is located near the junction of the Eunice and Monument areas. The latter gained a new project from Continental Oil Company's State 3-A-26, C SW NW 26-19s-37e. Plains Production Company has resumed work in the Langlie area with rigging up operations on Stewart 1, NE SW SW 10-25s-37e.

Continental Oil Company's State 5-A-17, C SW NE 17-19s-37e, northeast edge location for Monument field, required 12,048 gallons of acid in four treatments and a 250-quart nitro shot to overcome tight lime condition at 4027 feet, or 330 feet sub-sea. The well gauged 27 barrels per hour on ¾-inch choke and 784,000 feet of gas. Gulf Oil Corporation's south offset producer likewise had difficulty in developing flowing production. These two wells will discourage exploration to the east.

Petroleum industry vehicles have low accident record

Accidents involving motor vehicles operated by the petroleum industry are one-third less than the general accident rate of commercial vehicles, according to a report of the department of accident prevention of the American Petroleum Institute.

Records of 78 oil companies operating 42,554 vehicles during 1936, show that these vehicles traveled a total of 676,617,693 miles during the year with an accident rate of only 1.62 accidents for each 100,000 miles of travel. That compares with 2.32 accidents per 100,000 miles of travel for commercial vehicles whose experience was reported to the National Safety Council for the year ending July 1, 1937, covering 898,526,000 miles of travel.

The summary indicates that the frequency of motor vehicle accidents in the petroleum industry during 1936 showed a slight decline as compared with 1935, whereas according to reports of the National Safety Council, motor vehicle accidents for the nation as a whole increased sharply.

Accidents shown in the Institute's statistics take in all types, including minor accidents, as scratched or dented fenders.

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NEW MEXICO Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
EDDY COUNTY—		
F. W. & Y. Inc., Jackson 3-X, near c nw se 13-17s-30e	1027	3510
Gissler 5, c ne se 14-17s-30e	170	3450
Republic Prod. Co., Robinson 2-B, c nw ne 27-17s-29e	15	2805
LEA COUNTY (Hardy)—		
Repollo Oil Co., W. H. Turner 1, nw nw sw 29-21s-37e	65	3800
LEA COUNTY (Mattix)—		
Humble, J. Williams 2, c se nw 34-24s-37e	491	3505
Western Gas Co., W. H. Harrison 4, c nw sw 29-24s-37e	¶6	3699
LEA COUNTY (Monument)—		
Continental, State 5-A-17, c sw ne 17-19s-37e	1200	4027
Gulf, State-Graham 2-G, c nw se 17-19s-37e	150	4010
Tide Water Associated, State 2-K, c se sw 13-20s-36e	1500	3866
LEA COUNTY (Penrose)—		
Mid-Continent Pet. Corp., Eva Owens 1, c nw nw 3-22s-37e	40	3737
Repollo Oil Co., A. L. Christmas 2, ne se ne 28-22s-37e	80	4073
LEA COUNTY (Skelly)—		
Skelly Oil Co., B. F. Harrison 2-B, c nw nw 9-23s-37e	¶13	[illegible]
G. W. Sims 3, c nw ne 9-23s-37e	200	3642
H. O. Sims 2, c se ne 4-23s-37e	150	3676

*Failures; †Junked; ¶Million cu. ft. gas.

ROCKY MOUNTAIN FIELDS

Minnelusa sand well flowing 75 barrels per hour.

* * *

No shows in Madison lime in Muskrat deep test.

Casper, Wyo.—The best completion to date from deep Minnelusa sands of Lance Creek field, Niobrara County, eastern Wyoming, was brought in this week by Ohio Oil Company. Lamb 10 Account 2, NE SE 5-35n-65w, completed at 5423 feet, flowed 1666 barrels of oil the first 22 hours with 1,700,000 cubic feet of gas. The well is making about 75½ barrels an hour since cleaning out. Top of the saturated section of the formation was encountered at 5405 feet where 7-inch casing was set.

Near completion this week is Ohio Oil Company's Taylor 2 OPC-16, NWC NW SW 3-35n-65w, deep Minnelusa test on the east flank of Lance Creek. The well is running a formation test of the objective sand, in which the hole is bottomed at 5611 feet. Company's Leo 1 OPC-7, NWC NW SE 35-36n-65w, is drilling in red beds at 5270 feet.

Shows in Upper Minnelusa

Argo Oil Corporation's Ford 4, SW SE 33-36n-65w, deep well in the northeastern sector of Lance Creek, is coring into the Minnelusa at 5500 feet. Well made 13 barrels of oil an hour from the upper section of the sand, was cored at 5365 feet.

In Muskrat field, Fremont County, west central Wyoming, Sinclair-Wyoming Oil Company's Muskrat 2-C, deep test well of the field located in NE SW SW 1-33n-92w, is nearing critical stage. The well is drilling in the objective formation, Madison lime, at 7977 feet. Operators have reported no saturation in the formation to date.

Italo Petroleum Corporation is waiting on cement to set around 15½-inch surface casing at a depth of 300 feet in its Phebus-Government 1, NW NW SW 11-44n-92w, northwest extension test of the Hamilton Dome field, Hot Springs County, north central Wyoming. Hole has been spudded to 350 feet and will resume drilling immediately.

Stanolind Oil & Gas Company ran the final production test on the deep Tensleep test well in Salt Creek field, Natrona County, central Wyoming. Tensleep 8, CNW SE 26-40n-79w, flowed 211 barrels of oil initial from plugged depth at 4000 feet in the Tensleep sands. The well drilled to 4143 feet and plugged back.

Stanolind's Wyoming Associated Oil Company-Tensleep 11, CNE NW

MOUNTAIN STATES Completions

COLORADO

Company, Well and Location	Init. Prod. Bbls.	Depth
MOFFAT COUNTY (Iles Dome)—		
Stanolind, Iles 16-X, se nw nw 23-4n-92w	95	3451
Texas Co., Iles Investment Co. 4, lot 7, 23-4n-92w	51	3490

MONTANA

GLACIER COUNTY (Cut Bank Field)—		
Santa Rita Oil & Gas Co., Lander 2, sw ne 16-35n-6w	519	2917
TOOLE COUNTY (Kevin-Sunburst Field)—		
Adlon Oils & Mines, Ltd., Ward 2, sw se 29-35n-3w	18	1735
A. E. Crumley, Government 2 080003, nw se se 35-36n-2w	14	1502
Larson & Ness, Government 1, 080104, cnw ne 30-35n-3w	*	1898

*Failures; †Junked; ¶Million cu. ft. gas.

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No expensive and delicate instruments are required to weigh a well equipped with a Sullivan Pumphead. It is only necessary to take the pressure with an inexpensive and rugged pressure gauge, at a connection provided in the lower cylinder head, and multiply it by the net area of the piston.

It is not necessary to stop the Pumphead, as the pressure gauge can be connected without interrupting production. The pressure can be read easily, at any point of the polished rod stroke, as the gauge is stationary.

It is easy and cheap to determine if a larger plunger can be used, and obtain other important production information. See complete story on page 12 of *"Selective Pumping"*, sent free on request.

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SULLIVAN PUMPHEADS

35-40n-79w, one of the three new wells to be drilled to the deep Tensleep sand of the Salt Creek field, was spudded in this week. Wyoming Associated Oil Company-Tensleep 29, CSW SW 26-40n-79w, another of the new deep wells for the field, is moving in derrick.

Southeast extension test of the Pilot Butte field, Fremont County, Wyoming, Ben Stewart et al's Darnell 1, NE SE 26-3n-1w, 1½ miles southeast of the present outlying producer, is drilling below 500 feet this week. Ten-inch hole was reamed to 475 feet, where operators set 8¼-inch casing for water shutoff.

In the Hidden Dome field, Washakie County, north central Wyoming, Wyoming Oil & Refining Company's Government 9, N NW NW 31-48n-90w, has encountered good oil shows in the Frontier formation and is testing production in the formation at a depth of 1489 feet. Seven-inch production casing has been set on top of the sand at 1460 feet.

Billy Creek Test In Bighorn

Deep test well of the Billy Creek field, Johnson County, northern Wyoming, Carter Oil Company's Fred Rider 3, NW SE 17-42n-62w, logged the top of the Bighorn lime formation at 7260 feet this week and is drilling ahead at 7497 feet. The Bighorn formation is a part of the thick lime beds which, with the Madison lime, overlie the Cambrian formations in this area. Correctly classified as an Ordovician formation, the Bighorn is generally classed with the Madison in the Rocky Mountain area.

In the LaBarge field, Lincoln County, western Wyoming, Place Oil Company's 1, SE SE SE 9-26n-113w, is shut down at 1228 feet waiting on casing before drilling further to test the possibilities of a saturated section reported found at 1212 feet.

Rocky Mountain Reunion during Houston show

Houston.—Plans have been perfected for a reunion of old-time and present Rocky Mountain oil men during the Oil-World Exposition in Houston. The plan is to get together all those who have served any time in the Rocky Mountain district on October 13 at the Glenbrook Country Club. The day has been designated "Rocky Mountain Day" by show officials. Those eligible and desiring to attend have been requested to send in their names to W. L. Walker, 708 Texas Company Building, Houston, at once.

During the afternoon those wishing to play golf will find the facilities of the club open to them. In the evening there will be a barbecue and entertainment. The cost is $3.50 per person.

A committee is composed of Frank Pryor, Stanolind Oil & Gas Company; A. S. Bailey, The Texas Pipe Line Company; W. C. Hill, Oil Well Supply Company; Louie Cron, Rector Well Equipment Company; W. L. Walker, The Texas Pipe Line Company; H. E. Hamilton, Mid-Continent Supply Company; Art Olson, Olson Drilling Company; Brad Mills, The Oil Weekly; Johnny Moran, Shaffer Tool Works, and T. H. Andrews, Stanolind Oil & Gas Company.

EASTERN FIELDS

Coal Basin extended to include Jefferson County.

★ ★ ★

Salt water shut off in Clay City extension well.

Pittsburgh, Pa.—Jefferson County was added to the oil producing area in the Illinois Coal Basin Saturday when Dee & Carter's J. H. Hamilton 1, SW NW Section 20, Township 4s-3e, flowed 35 barrels in 2 hours after treatment with 1000 gallons of acid at 2929 feet. It was planned to give additional acid, and operators expected production of between 200 and 500 barrels daily.

The wildcat was started as a partnership venture by Dr. W. J. Carter, Mattoon, and Edward L. Dee, Mount Vernon. The partnership was dissolved a week ago; Carter received the well and leases on 1000 acres immediately surrounding it, while Dee received leases on the remaining 5000 acres held under the partnership.

May Be Big North Extension

Myers & Fitzpatrick Company's Shannon 1, Zif Township, Wayne County, reported an oil showing in Weiler sand at 2700 feet and is being closely watched as a possible extension of the Clay City field of Clay County several miles south of Duncan Oil Company's Carroll 1, which provided a 2-mile extension in that direction when it came in a week ago. Shannon 1 will be drilled to McCloskey sand, expected in another 250 feet. Zif Township is on the northern edge of Wayne County and adjoins Clay Township of Clay County, in which Clay City field is located.

Carroll 1 developed salt water last week, after coming in several days earlier with initial production of 1850 barrels daily. The salt water was shut off, however, and the well was flowing 500 barrels daily at the last report.

Gulf Refining Company entered the Illinois development picture last week with announcement of its first test, a wildcat, on the James Laughton farm, Section 29, Pixley Township, Clay County, ½ mile east of Sailor Springs. A seismograph crew surveyed the territory for several weeks before the location was chosen. The company was rigging up as the week closed.

Carter to Try Again

Carter Oil Company is moving in materials for its second Coal Basin test, Mary Miller 1, Fayette County. This company's first test, Metzger 1, was dry in McCloskey formation, from which large production is being obtained in Clay County, and is drilling below 2500 feet, scheduled for the Devonian formation.

Continental Oil Company is active with a core drilling outfit in Jasper County where it holds options on a large block.

Niagara Oil Corporation struck additional gas pressure when it deepened its test on the Sliverville lease, 9 miles south of Bradford, 4 feet to 1633 feet. Production, which dropped from 240 barrels an hour to 15 barrels an hour after one week, was boosted to 60 barrels an hour with deepening. Following a drop to 35 barrels an hour, operators were preparing to shut in and drill further. The test came in two weeks ago as the first gusher in the Pennsylvania grade crude region in 15 years.

In Posey County, Indiana, where 180,000 acres are under lease, Michel Brothers and Nelson will drill on the Emmer Aldrich farm, 2 miles north of Wadesville. Five previous attempts to attain commercial production in this county resulted in only slight showings of oil. Carter Oil Company and the Evans Oil Company are now drilling.

Leases on 42 farms, totaling 4411 acres, have been taken by the Midwest Development Company of Cleveland in Greene County, Ohio, and a wildcat test is to be drilled immediately on the Archie E. Peterson farm near Yellow Springs.

The largest gas well of several weeks in the Oriskany fields of Kanawha County, West Virginia, was completed by the United Carbon Company on the Curtis Harper et al tract, Poca district, at 4917 feet. It gauged 15,000,000 cubic feet a day.

Wells of the Preston Oil Company and Kachelmacher Estate, both with initial production of 40 barrels daily, led Ohio operations of the week. The Preston well was No. 1644 on the Sunday Creek Coal Company lease, Hocking County, and was bottomed at 3630 feet. The Kachelmacher well was No. 19 on the Hemlock Coal Company tract, Perry County, bottomed at 3675 feet. Thirty completions were recorded in Ohio, of which 11 were producers with an average initial yield of 12 barrels daily, 13 were gas wells, and 6 were failures.

Pennsylvania completions totaled 6, 2 of which were producers with average daily production of 40 barrels, 3 were gas wells, and 1 was a dry hole.

Illinois Mineral Industries Conference to feature oil

Urbana, Ill.—Current developments of special significance to the Illinois petroleum industry will be the subject of addresses and papers to be given at the Illinois Mineral Industries Conference, to be held in Urbana on October 8 and 9.

Sponsors of the conference are the Illinois State Geological Survey, the engineering experiment station of the University of Illinois, and the Illinois Mineral Industries committee. Special sessions on oil and gas will be held on Friday afternoon and Saturday morning.

Full Program

The general session for all groups attending the conference will be convened at 11 a.m. on Friday, with an address of welcome by President A. C. Willard of the university, and an address on "Research in the Mineral Industries," by Clyde E. Williams, director of the Battelle Memorial Institute, of Columbus, Ohio.

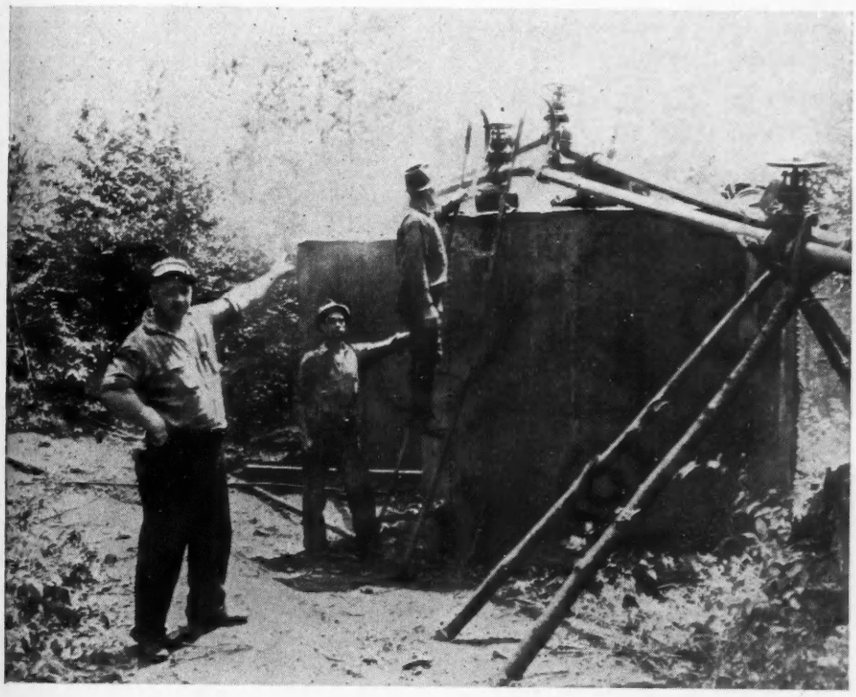
The programs for the oil and gas session follow:

Friday Afternoon 2 o'clock—T. B. Steele, chairman, manager, Kewanee Oil & Gas Company, secretary-treasurer, Illinois-Indiana Petroleum Association, Robinson. (1). State Regulation of Oil and Gas Production for the Prevention of Physical Waste, William Bell, Bell Brothers, Robinson, president, Illinois-Indiana Petroleum Association; representative of Governor Horner on the Interstate Oil Compact Commission; (2). Changing Legal Concepts Affecting the Oil and Gas Industry, Walter L. Summers, professor of law, University of Illinois, Urbana; (3). Economic Aspects of the Fuel Oil Industry, Walter H. Voskuil, mineral economist, Illinois State Geological Survey.

Friday Evening: 6:30—Annual Mineral Industries (Informal). All mineral industries participating.

Saturday Morning: 9:30—C. C. Carroll, Chairman; vice president, Ohio Oil Company, Marshall, Illinois; (1). Developments in Illinois Since January 1, 1937, and Their Significance, A. H. Bell, geologist and head, oil & gas division, Illinois State Geological Survey; (2). Oil Exploration in the Eastern Portion of the Illinois Basin, Theron Wasson, chief geologist, Pure Oil Company, Chicago; (3). Water Flooding, Paul D. Torrey, geologist, Sloan & Zook Company, Houston, Texas; (4). Recent Developments in Water Flooding in Illinois Oil Fields, Frederick Squires, associate petroleum engineer, Illinois State Geological Survey.

Saturday, Noon:—All-Mineral-Industries Luncheon (Auspices of the Illinois Mineral Industries Committee).



—Photos Courtesy of Olean (N.Y.) Times-Herald.

History was made in the Eastern Fields a week ago when Niagara Oil Company brought in the first gusher in the Bradford field in 15 years, with initial production of 240 barrels an hour. Crude spurted 40 feet over the 60-foot derrick twice hourly for an entire night before the well was brought under control. The first picture shows driller H. R. Mays, right, congratulating his son, Raymond Mays, tool dresser, on completion of the capping of the well. In the second, Driller Mays points to the tank to which the oil is flowing. Holding the ladder is B. Hague and on the ladder is Wilson Fink, both pipe fitters. Mays and his son were alone at the well when it was brought in at 1613 feet. Production settled to 15 barrels an hour after one week, and the well has been shut in preparatory to drilling deeper.

The conference will adjourn in time so that all who wish to do so may attend the Notre Dame-Illinois football game, which will be played in the Illinois Memorial Stadium at 2 o'clock.

Pittsburgh meet of A.A.P.G. to feature Eastern States

Pittsburgh.—Technical papers dealing with the geology of the eastern part of the United States will feature the mid-year meeting of the American Association of Petroleum Geologists in the Urbana room of the William Penn Hotel here October 14, 15 and 16. These will be presented in three sessions: Thursday afternoon, Friday morning and Saturday morning.

Thursday morning will be devoted to local trips through Pittsburgh, Friday afternoon to a tour of the Jones & Laughlin Aliquippa steel mill. Saturday afternoon has been reserved for those who wish to see the Notre Dame-Carnegie Tech football game, and R. W. Clark, P. O. Box 1166, Pittsburgh, has reserved a block of 100 tickets pending early receipt of reservation for them

from those contemplating attending the convention.

Field trips, starting October 11, include the peneplains of the Allegheny plateau, the gently folded foothills and the mountain front, the steeply folded Appalachian mountains and the Shenandoah Valley. On the third day of the trip many of the fields of West Virginia will be visited. A post convention trip which will leave Pittsburgh after the football game will include a visit to the Drake well and to the repressuring operations at Titusville, the flooding operations at Bradford, and all other oil and gas fields in northern Pennsylvania, concluding Sunday evening.

Oil City, Pa.—The Pennsylvania Grade Crude Oil Association will hold its 1938 convention at the William Penn Hotel, Pittsburgh, on June 16-18, it was announced last week. The last meeting held in Pittsburgh was in 1931, five annual gatherings having been held at Pennsylvania State College and this year's convention aboard a Great Lakes steamer.

Petroleum Exposition

A 40 PERCENT increase in outside exhibit space is planned for the Tenth International Petroleum Exposition in Tulsa, May 14 to 21, 1938, according to W. G. Skelly, president.

Additional ground has been secured at the east end of the million dollar exposition plant and the new space will border on a new street, similar to Drake Drive on the west end.

Other improvements to the plant and grounds will include a new modernistic brick and stone, air-cooled cafeteria with 50 percent more dining space; increase in electric power output on 440, 220, and 110 volt lines; extension of water and sewer lines; and improvements to the five large exhibit buildings.

EASTERN FIELDS
Completions
OHIO

Company, Well and Location	Init. Prod. Bbls.	Depth
ASHLAND COUNTY—		
Ohio Fuel Gas Co., J. W. Kine 1..	¶.46	2933
ATHENS COUNTY—		
Carpenter & Glazier, Lena Bean 16	2	140
J. J. Smith 1	*	....
Gross, Frebault et al, Amanda Clutter	¶1.00	1215
J. V. Bowman, R. A. Smith 2.....	¶.07	1445
BELMONT COUNTY—		
Union Gasoline & Oil Corp., Thomas Chebowski 2	4	1682
Barnesville Development Co., Belmont County Childrens Home 1..	¶.08	1270
GUERNSEY COUNTY—		
Geo. Jewell et al, G. K. & M. E. Smith 2	*	1435
HOCKING COUNTY—		
Preston Oil Co., Sunday Creek Coal Co. 1644	40	3630
LICKING COUNTY—		
Geo. H. Long, Nathan Loper 1....	.50	716
Wehrle Gas Co., Jesse M. Lake 2.	¶.20	2873
Preston Oil Co., Charles A. Moore 1	*	2975
LORAIN COUNTY—		
Kemrow Co., Carl E. Newbert 2..	*	2706
MEDINA COUNTY—		
Robinson et al, B. J. Vandermark 6	8	467
Ray Grim et al, B. E. Grim 1.....	3	473
MEIGS COUNTY—		
John Mayer et al, Pearl Hysell 4..	¶.40	655
Fugate et al, S. Ethel Metcalf 2..	¶.13	895
Meigs Development Co., Charles M. Smith 2	¶.10	1925
MONROE COUNTY—		
H. B. Walker & Co., E. F. McCaslin 2	25	1285
MUSKINGUM COUNTY—		
Wittmer Co., Wm. J. Dennison 1..	*	4125
NOBLE COUNTY—		
Gold Crown Oil & Gas Co., J. T. Christy 1	¶.79	640
Preston Oil Co., Abby Davis	¶.42	1695
Chaseville Oil & Gas Co., D. G. Steele 2	¶.17	....
E. R. Dutton et al, C. G. Watson 1	¶.02	1476
Harrietsville Drilling Co., R. C. Van Fossen 3	*	1005
PERRY COUNTY—		
Kachelmacher Estate, Hemlock Coal Co. 19	40	3675
WASHINGTON COUNTY—		
Metcalf et al, Grover Henderson 1	5	1200
Earl Montgomery et al, Jacob Gross 2	5	861
W. W. Watson, J. B. Francisco 4..	.25	490
C. E. Smith, Geo. W. Adams 3....	¶.07	1350

WEST VIRGINIA

Company, Well and Location	Init. Prod. Bbls.	Depth
BRAXTON COUNTY—		
Pittsburgh & West Virginia Gas Co., Parkersburg Mills Co. 7599.....	¶1.00	1645
Parkersburg Mills Co. 7598.....	¶.06	2319
T. M. Carr 7606.....	¶.30	1516
CABEL COUNTY—		
R. J. Petry, Henry Bond 1.....	¶1.76	2926
Fairfax Gas Co., Leonard Paugh 1..	¶.19	3136
CALHOUN COUNTY—		
Starcher & Foster, R. W. Hall 1...	1.50	....
Foreman Oil & Gas Co., J. W. Conley 1	¶.37	1340
Great Elk Oil & Gas Co., Samuel Buchman 33	¶	2180
GILMER COUNTY—		
Chartiers Oil Co., Daniel Huffman 10	12	1727
John M. Cruxal, Dora Clayton 1..	¶.07	2523
HARRISON COUNTY—		
Lumberport & Shinnston Gas Co., E. Robinson 1	¶	2978
KANAWHA COUNTY—		
United Carbon Co., Curtis Harper et al	¶15.00	4917
South Penn Oil Co., Kate Scott 4..	¶5.00	5184
Owens Illinois Glass Co., L. A. Myers 11	¶.66	5040
LEWIS COUNTY—		
Gilco Oil & Gas Co., Chapman & Rolson 1	¶.05	2510
MARSHALL COUNTY—		
Carnegie Natural Gas Co., W. G. McGlumphy 6	¶.95	1670
PLEASANTS COUNTY—		
Injun Oil Co., Rozella Drake 1....	¶.11	1590
RITCHIE COUNTY—		
Reno Oil Co., Benjamin F. Moore 1	*	1956
J. H. Smith et al, S. A. Kirkpatrick 1	*	1790
TYLER COUNTY—		
Hope Natural Gas Co., Martha O. Goff 4	¶1.25	1547
WAYNE COUNTY—		
Southeastern Gas Co., Frank Marcum 2	¶2.00	1380
Mountaineer Gas Co., Hurston Adkins 1	¶.94	3624
WIRT COUNTY—		
Andrews & Roberts, G. W. Gillespie 1	.50	905

KENTUCKY

DAVIESS COUNTY—		
South Penn Oil Co., E. C. Ward 8	¶.77	950
Rex-Pyramid Oil Co., Rolla Cooper 2	*	674
HANCOCK COUNTY—		
Frank Damron, H. C. Emrich 3...	*	750
Chester Oil Co., J. W. Baughn 9..	*	512
Kentucky Natural Gas Co. et al, Edward Fuchs 1	*	750
LEE COUNTY—		
Evans Oil Co., Andrew Combs 14..	3	....
Floyd Fitch, Levi Ross 1.....	*	....

PENNSYLVANIA

BUTLER COUNTY—		
Geo. L. Naste & Co., United Presbyterian Orphanage 1	20	1603
GREENE COUNTY—		
Equitable Gas Co., S. C. Brock 1414	¶.89	2963
Milliken, Myers & Hoskinson, Ruth Bane 2	*	3027
WASHINGTON COUNTY—		
Union Gasoline & Oil Corp., B. F. McClain 4	60	....
Penn Oil & Gas Co., John Russell	¶.50	2857
McGregor & Co., J. Buchanan 1..	¶.15	2645

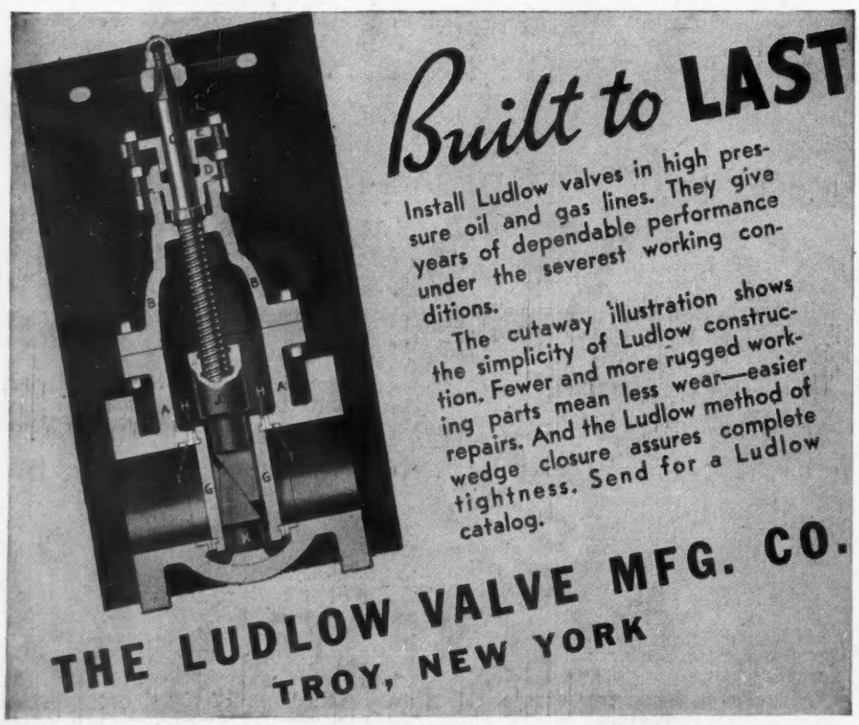
INDIANA

DELAWARE COUNTY—		
Big Four Gas Co., John VanFleet 1	¶	....
MARTIN COUNTY—		
Indian Springs Oil Corp., State Life Insurance Co. 1	*	....
PERRY COUNTY—		
Hollingsworth Gas & Oil Corp., Elizabeth Grammelspacher Estate 3	10	....
PIKE COUNTY—		
Murphy Oil Co. of Pa., Essie Stewart 2	25	1008
SULLIVAN COUNTY—		
H. W. McCullough, J. V. Dix 1....	5	710
O. A. Thayer et al, J. Bates 1.....	5	787

ILLINOIS

CLAY COUNTY—		
Pure Oil Co., E. Walters 1.....	1045	2977
E. Weiler 2	975	3016
B. Travis 2	755	2967
Oscar Poppe 3	135	2954
EDGAR COUNTY—		
Hassett et al, E. Stark 1.....	5	502
MARION COUNTY—		
J. W. Carter et al, Ballance et al 1	55	1450
Adams Oil & Gas Co., Majonnier 2	55	1450
Hempen & Burgess, Miller 1.....	*	1047
Bryant & Cassidy, Joliff 1.....	*	1655
Sunflower Oil & Gas Co., Murfin 1	*	1449

*Failures; †Junked; ¶Million cu. ft. gas.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MICHIGAN FIELDS

Bentley Township extension of Buckeye holds interest

Mount Pleasant, Mich.—Interest continues to center on the Bentley Township extension well of Buckeye field, Gladwin County, although operators as yet have not deepened or tried acid. As the test now stands, it is not generally accepted as a commercial proposition. From 5 to 10 barrels production is the best obtainable with the swab.

The Bentley test, Harold J. Hand's Smart 1, Section 29-17n-2e, 7 miles southeast of Buckeye production, is showing at 3497 feet, with Dundee top at 3414 feet.

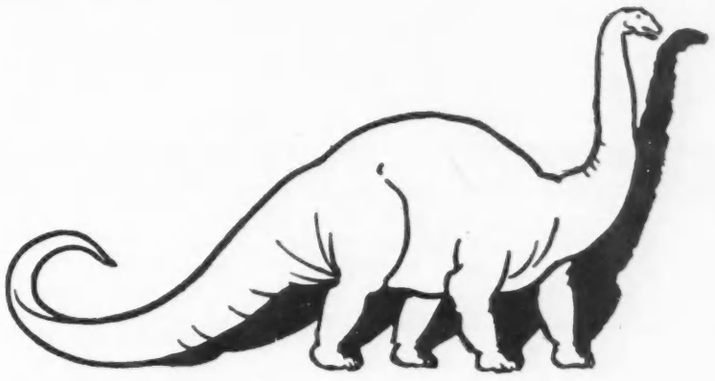
An average of 61 cents an acre was bid on 25,095 acres of state land oil leases at the September 3 sale in Lansing. All the land offered was rated as wildcat, with $2.50 per acre the top price bid. Leases carry an eighth royalty, 50 cents per acre rental the first year and $1 per year afterwards, besides the bonus.

MICHIGAN

Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
ALLEGAN COUNTY—		
Champion Dev., Detling 1, se se se 35-2n-13w	10	1458
Allegan Crude Oil Co., Heasley 2, se nw ne 21-4n-13w	430	1586
John Arlen, Barnicle 1, ne se sw 33-2n-14w	*	1381
ARENAC COUNTY—		
Weber Oil Co., Helein 2, se se se 3-20n-4e	*	2659
W. M. Dannemiller, Swafield 1, ne se sw 10-20n-4e	90	2639
BAY COUNTY—		
Wright & Keeler, Booth 1, sec 24-14n-6e	*	2925
CLARE COUNTY—		
J. A. Peirce, Presley 1, s½ sw 32-17n-3w	*	1670
Pure, Apel 1, c n½ nw sw 31-19n-5w	*	4031
GLADWIN COUNTY—		
James Flanigan, Schultz 1, ne se nw 9-18n-1w	*	3702
Sun Oil Co.'s Rabb 6, nw ne ne 10-18n-1w	290	3652
C. W. Teater, Doxomos 7, ne sw nw 11-19n-1w	1800	3628
Adamets 6, se sw sw 12-18n-1w	600	3640
Rex Oil & Gas Co.'s Jacob 3, sw se nw 11-18n-1w	350	3636
Geo. Hanner, Armstrong 2, se ne sw 23-18n-1w	250	3595
Turner Pet. Co., McMahon 2, ne se sw 36-18n-1w	350	3608
ISABELLA COUNTY—		
Pure Oil Co., Willie 7, nw ne ne 4-14n-6w	190	3623
Latham 5, ne sw se 33-15n-6w	200	3664
Jackson & Schmidt, Hughes 4, se se ne 19-15n-3w	35	3652
MIDLAND COUNTY—		
Sun, Consumers Power 1, c n½ ne ne 8-16n-1w	*	4082
Schnelling & Schrot, Scott 2, sw ne nw 8-14n-2w	50	3566
OGEMAW COUNTY—		
Fletcher & Leman's Mills Est. 1, c se 36-21n-3e	*	1239
Kinwel Oil Co., Kennedy 1, se nw se 19-22n-2e	70	2690
Fortney Oil Co., County Farm 4, ne sw nw 20-22n-2e	80	2755
SAGINAW COUNTY—		
Mid-West Pet. Co., Spurbeck 1, se se ne 6-11n-2e	*	3254

*Failures; †Junked; ¶Million cu. ft. gas.



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SINCLAIR

Large well put on production at Inglewood.

* * *

Kettleman Hills outpost coring below 11,000 feet.

Los Angeles.—Shell Oil Company recently completed one of the best wells placed on production for several months in the old Inglewood field in Los Angeles. Rindge 23 was good for 1600 barrels of 33.7 gravity clean oil, plus 1,100,000 cubic feet of gas. String of 6⅝-inch was landed at 3863 feet and perforated at 3819 feet to bottom, 3700 to 3778 feet, 3500 to 3611 feet, and 3261 to 3460 feet. Pressure was 100 pounds on the tubing and 550 pounds on the casing.

Inglewood was discovered in 1924. The proven acreage is 865 acres. There are 84 wells in the field which are shut in and 147 on production, all on the pump, except the last completion. The field has four proven sands, with all except 50 wells producing from the upper zone known as the Vickers-Machado. The lower zones, proved some years ago, have been held in reserve.

Shell Oil Company also recorded a new completion far above the average at Dominguez. Reys 91, with bottom at 7732 feet, has been completed for 1250 barrels 30 gravity pipe line oil. A string of 9⅝-inch was cemented at 6635 feet ,and 6⅝-inch liner was landed at 7727 feet and cemented through perforations at 7029 feet. The liner was perforated at 7640 to 7727 feet, 7410 to 7475 feet, and 7301 to 7376 feet. Pressure is 150 pounds on the tubing and 910 pounds on the casing, and gas production is 830,000 cubic feet. Six wells are drilling in the field and 3 new holes are about ready to start. Union Oil Company and Shell Oil Company control a large part of the proven acreage.

3000-Barrel Mountain View Well

That the Mountain View field in Kern County is capable of furnishing good flowing wells was indicated last week when P. H. Greer's Perril 2 was completed at 5711 feet for 3000 barrels. On the second dav, the well was choked back to 1995 barrels of 25.8 gravity oil, with 250 pounds on the tubing and 1025 pounds on the casing, while gas production was 1,500,000 cubic feet. Ten wells are now drilling in this field, and 3 large rigs are up.

At El Segundo, Geo. F. Getty's Duley 1, with bottom at 7102 feet, got out of control, blowing great quantities of sand and gas under high pressure. Gas was ignited and well burned for 2 hours. The steel derrick was melted. Water broke in and the flames were quenched. The well is still making gas and water by heads, but is expected to quit soon. The hole will be abandoned, as it is badly cratered. It is understood this well encountered the same upper gas zone picked up by Ohio Oil Company's Gough 3 at 7100 feet. According to field information, Getty will start a new well very close to the ruined hole.

El Segundo production is obtained from below 7100 feet, and at times the gas pressure is hard to control. The custom is to cement 11¾-inch or 13¾-inch at about 1100 feet. In most instances 6⅝-inch is landed on top of the oil zone.

Union Oil Company's Kernco 1-34, wildcat in Section 34-28-25, with bottom at 10,424 feet, ran 2½-inch tubing to 9994 feet, and on an open hole test showed a quantity of water, some gas and a little oil. Brown shale is now being cored at 10,465 feet.

CALIFORNIA
Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
KETTLEMAN HILLS—		
Standard, No. 3-P-78	210	8389
MIDWAY-SUNSET—		
Hugh B. Evans, No. 19	325	2170
MOUNT POSO—		
Ring Oil Co., Louden 1	300	1723
MOUNTAIN VIEW—		
P. H. Greer, Inc., Perrel 2	1500	6631
Mohawk Pet. Co., Earl Fruit 5	590	5450
ROUND MOUNTAIN—		
Calif. Western Oil Co., No. 4	450	1884
SANTA MARIA VALLEY—		
Hancock Oil Co., Rosenbloom 1	490	5069
Pacific Western, Hobbs 4	500	4540
S-M Oil Co., Gerard-Dal-Porto 1	485	4445
VENTURA AVENUE—		
Tide Water Associated, V. L. W. 31	600	6921
KERN COUNTY—		
Apex Pet. Corp., No. 10-4	*	2251
Tide Water Associated, Newhope 2	*	2775
Ohio Oil Co., Title Ins. D-1	*	9625
DOMINGUEZ—		
Shell Oil Co., Reyes 91	1350	7732
HUNTINGTON BEACH—		
Union, Brooks 10	75	4252
INGLEWOOD—		
Shell Oil Co., Rindge 23	1600	3868
MONTEBELLO—		
Texas Co., Baldwin 17	300	8046
ROSECRANS—		
Universal Consol. Oil Co., Trust 1	250	7580
WILMINGTON—		
Bankline Oil Co., Watson 7-3	250	3420
D. D. Dunlap, No. W-3	315	3595
General Pet. Corp., Ford 18	550	5435
Osco A-3	180	4487
Pacific Western, Norris 1	350	2918
Packard Pet. Corp., No. 1481-1	370	3602
Royalty Service Corp., Nelson B-4	365	3499
P. E. 2	295	3624
Selegna Dr. & Prod. Co., No. 8	550	3600
Union Pacific Ry. Co., Offset 4	170	3522
Offset 43	180	3645
YORBA LINDA—		
Bachman Pet. Corp., Tuffree 1	200	1936

*Failures; †Junked; ¶Million cu. ft. gas.

The edge test for Kettleman Hills, north dome, is coring ahead in barren gray sand at 11,030 feet. This is Kettleman North Dome Association's No. 4-18J, Section 18-21-17, which picked up a good productive zone at about 10,831 feet, but passed out of this zone at 10,861 feet.

It is rumored that Standard Oil Company of California is starting a new hole in Section 1-22-17, which will attempt to reach the new deep producing zone picked up by 4-18J.

15 Drilling at Santa Maria

The new Santa Maria Valley field in Santa Barbara County is becoming more active. Field reports indicate 15 wells are drilling, in addition to 7 rigs and locations. In the west side extension, Union Oil Company recently brought in the first flowing well. Russell 2 was completed at 4457 feet for 1090 barrels of 17.3 gravity oil.

Wilmington field continues to lead the state in field activity with 27 drilling projects, 18 rigs and 42 locations. Union Pacific Railway Company continues the most active operator in the field, most of its projects being offsets. And no official locations have yet been made in the field extension into Long Beach proper, since authorities are still undecided as to restrictions to be imposed.

Standard completes large producer in Greeley field

Los Angeles.—Standard Oil Company of California has completed a big well in the new Greeley field in Kern County, the production building up to 4460 barrels of 51.8 gravity clean oil, in addition to 52,000 000 cubic feet of gas. This is Kern County Land 11-7, with bottom at 7815 feet. A string of 9-inch casing was cemented at 7688 feet, with 174 feet of 6⅝-inch, including 125 feet of perforated, landed at 7814 feet. The new well, located almost a mile east of the discovery well, is the most easterly completion for the field. The tubing has a pressure of 875 pounds, while the casing pressure is 1450 pounds.

Standard Oil Company of California, thought to control practically all of the proven acreage at Greeley, is drilling two tests and will start two others very soon.

The large volume of wet gas is the cause for the very high gravity of the oil in Greeley, the situation being slightly similar to that at Kettleman Hills in the early days of the field.

In the North Belridge field, south edge, Tide Water Associated Oil Company's Reward 6, Section 34-27-20, has been completed for 3000 barrels of 31 gravity oil, but is cutting 8 percent. It is expected the cut will clean up and the gravity increase slightly. Depth of hole is 8738 feet, with string of 7-inch casing cemented at 8120 feet. The flow is through 625 feet of perforated. It is estimated the well is making 13,000,000 cubic feet of gas.

Shell enlarging research laboratories at Emeryville

San Francisco.—Shell Development Company, Emeryville, California, is practically doubling the size of its research and laboratory facilities, which utilize a new building 85 by 120 feet, and remodeling the old building. The company employs about 150 men.

IMPORTANT WILDCAT TESTS

ALABAMA

CHOCTAW COUNTY—Joe Modisett et al's McCorvey 1, se sw sw 20-9n-2w, elev 120 ft, top Selma chalk 1865 ft, top Eutaw 2913 ft, dr 4050 ft, Tuscaloosa red beds.

GREENE COUNTY—Greene County Dev. Co.'s R. C. Lett 2, se nw 5-21n-2e, arr deepen 115 ft.

HOUSTON COUNTY — Rice O&G Co.'s Oakley Est. 2, nw sw 9-3n-29e, sd 4975 ft.

ARKANSAS

ASHLEY COUNTY — Phillips Pet. Co.'s Stillions Lbr. Co. 1, s½ sw nw 18-17-9, elev 85 ft, top Gray lime 5186 ft, Big lime 5192 ft, porosity 5212 ft, dry abn td 5615 ft.

CROSS COUNTY—Manning & Martin Inc.'s Park-Gieseck 1, nwc ne ne 4-6n-5e, set 10-in csg 754 ft, dr 2660 ft.

CLEVELAND COUNTY—J. R. Lockhart's Hernsberger 1, se ne 16-11-13, dk.

COLUMBIA COUNTY—Robt. Keen's Runyon 1, se ne 1-16-21, elev 299 ft, sd 1300 ft. Standard of La.'s McKean 1, c sw sw 8-16-22, elev 257 ft, dr 5920 ft. Tidewater-Seaboard's C. N. Crumpler 1, nec sw¼ 24-17-19, spd.

CRITTENDEN COUNTY—Stanley Oil Corp.'s D'Anna 1, 18-8-9, arr test so td 1387 ft.

DREW COUNTY — Sloan Wells et al's Hardy 1, sec nw¼ 3-14-7, rur.

HEMPSTEAD COUNTY—Easton, May & Murdock's R. M. LaGrone 1, ne ne 5-12-16. Davidson & Todd's Smith 1, sw se 1-11-25, dr 2773 ft red shale (Travis Peak).

LONOKE COUNTY—Frank Silver's Chambers Est. 2, sw ne nw 17-2-7, sd after testing sw 1500 ft. Al Demur's High 1, ne sw 25-1n-9w, sd 512 ft. Jas E. Russell's Gunter 1, 17-5-10, dk. Union Drlg. Co.'s R. W. Fuller 1, nec se¼ 6-13-21, woc surf csg.

MADISON COUNTY—J. E. & Jno. Hardy's Hamlin 1, sw nw ne 8-16n-26w, mim.

NEVADA COUNTY—W. E. Lokey Tr.'s Purifoy 1, ne ne 17-11-20, sd 1630 ft.

OUCHITA COUNTY—Copenhaver Oil Corp.'s J. E. Evens 1, ne sw 20-11-19, elev 154 ft, co td 1730 ft. Benedum & Trees Oil Co.'s G. W. Slaughter 1, nw nw 24-14-19, rur.

PIKE COUNTY—Beckwith et al's Hendricks 1, c nw se 16-8s-25w, sd 312 ft.

SALINE COUNTY—Duncan & Givens' Williams 1, nw ne 18-3-15, sd 104 ft.

UNION COUNTY — W. D. Wingfield's Southern Kraft 1, sw ne 18-16-4, elev 124 ft, dr 4880 ft. I. I. Langley's K. K. Langley 1, nw se ne 1-19-18, lcn. E. M. Jones' Marine Oil Co. 1, 17-18-17, elev 238 ft, logged 21 ft of sand so, flowed 39.3 gravity oil in 10-minute drill stem test with ¼-in choke open top & bottom from 7545-75 ft. arr make another test from 7575-96 ft. td 7596 ft. Lion O. R. Co.'s Morgan A-1, 18-18-17, dr 6189 ft.

CALIFORNIA

KERN COUNTY

MIDWAY-SUNSET—American Empire Oil Co.'s No. 1, 20-31-24, rig.

LERDO—Arkelo Pet. Co.'s Arkelo 41, 23-26-28. td 10,056 ft, redr at 7800 ft.

BENA—Bacal Oil Corp.'s No. 1, 5-30s-30e, sd 1790 ft, to drop from report. Cajalco Pet. Co.'s No. 1, 9-30-30, sd 3570 ft.

McKITTRICK—Birch Ranch Oil Co.'s Lovitt 1, 10-30-21, dr brown shale 2720 ft, 80 degree dips from 2573 ft.

WASCO—Continental Oil Co.'s K.C.L. A-2, 8-27-24, dr brown shale 10,370 ft, no showings. Seaboard Oil-Tide Water Associated's K.C.L. C-1, 26-27-24, dr shale 10,214 ft.

ROSEDALE—Continental Oil Co.'s K.C.L. B-1, 12-29-26, td 10,205 ft, redr at 5510 ft.

DEVIL'S DEN—Den Pet. Co.'s Bates 1, 20-25-19, sd 4598 ft. Geo. Goodrum's Baron 1-A, 24-25-19, dr shale 190 ft. Lube Oil Co.'s Gordon 1, 2-25-18, sd 4280 ft, to drop from report.

ROUND MOUNTAIN—Fremont Oil Co.'s Olcese 1, 26-28-29, sd 2820 ft. Rudolph Pageman's No. 1, 10-28-29, rig. Pebble Beach Oil Co.'s Olcese 2, 9-28-29, lcn, may not be drilled. Tampico Pet. Co.'s Bass & Goodnight K-3, 17-28-29, rur. J. J. Tavis' Olcese-Tavis 1, 4-29-29, td 3260 ft, gray sand, top Vedder 3215 ft, sd.

ABBREVIATIONS

The following abbreviations, signs, etc., are used in completions and wildcat reports in THE OIL WEEKLY.

*—*dry hole abandoned well.*
‡—*salt water (completions).*
†—*junked and abandoned.*
¶—*million feet of gas.*
abd—*abandoned.*
bbls—*barrels.*
br—*building rig.*
b.s.—*basic sediment.*
csg—*casing.*
co—*cleaning out.*
dd—*drilling deeper.*
dk—*derrick.*
dr—*drilling.*
fsg—*fishing.*
ft—*feet.*
hfw—*hole full of water.*
in—*inches.*
lcn—*location.*
m—*milling.*
mim—*moving in materials.*
mit—*moving in tools.*
mot—*milling on tools.*
n, s, e, w—*north, south, east, west.*
oih—*oil in hole.*
owdd—*old well drilling deeper.*
owpb—*old well plugging back.*
pb—*plugged back or plugging back.*
r—*reaming.*
rog—*rig on the ground.*
rur—*rigging up rotary tools.*
rust—*rigging up standard tools.*
sd—*shut down.*
sdtr—*sidetracking.*
sg—*show gas.*
si—*shut in.*
so—*show oil.*
so&g—*show oil and gas.*
spd—*spudding.*
sr—*straight reaming.*
sw—*salt water.*
td—*total depth.*
ur—*underreaming.*
wih—*water in the hole.*
wo—*workover.*
wocs—*waiting on cement to set.*
wosr—*waiting on standard rig.*

ARVIN—General Pet. Corp.'s Houchin 1, 27-31-29. dr shale 5210 ft

BELRIDGE—General Pet. Corp.'s St. Helens 1, 12-28-20, rur.

GRAPEVINE—Ohio Oil Co.'s T. I. & T. 1, 21-11-19, td 9625 ft, plug 5030 ft, abn. Reserve Oil & Gas Co.'s Tejon 33-2, 33-11-19, td 4505 ft, redr to 4476 ft, sd; Tejon 4, 33-11-19, td 5444 ft, pulled liner, co to 4607 ft, swabbing

STRAND—Ohio Oil Co.'s K.C.L. E-3, 14-30-25, lcn, grading.

KERN FRONT—Pacific Oil & Gas Dev. Co.'s Davidson 1, 36-27-27, dr silty shale 1814 ft.

ELK HILLS—Richfield Oil Corp.'s Buena Vista 1-A, 7-31-25, dr shale 3710 ft.

MOUNTAIN VIEW—Sexton Six Oil Co.'s Johnston 1, 6-31-29, dr shale 3910 ft. Union Oil-Standard's Barnbeltz 1-30-28, lcn.

FRUITVALE—Shell Oil Co.'s Bellevue A-36-31, 31-29-27, dr sandy shale 8990 ft.

KERN RIVER—Sleeper Ridge Oil Co.'s No. 1, 15-29-28, sd 50 ft. Well Developers' No. 1, 16-28-28, rur.

SEMI TROPIC—Standard's Randolph 2, 14-27-33, rig.

McGANDEN—Standard's Routzong 1, 2-30-28, rig.

GREELEY AREA—Superior Oil Co.'s K. C. L. 9, 3-30-26, dr shale 6127 ft.

SO. MARICOPA—Texas Co.'s Pioneer 1, 33-11-23, spud 8/29, dr.

MOUNT POSO—Trico Oil & Gas Co.'s Allen 1, 20-26-28, shale and sand 500 ft.

RIO BRAVO—Union Oil Co.'s Kern Co. 1-34, 34-28-25, td 10,424 ft in oil sand, ran formation tester, results not conclusive, running tubing for test.

MISCELLANEOUS

HUMBOLDT COUNTY—Texas Co.'s Eureka 2, 22-3-1, td 7708 ft, ran 8 in to 6580 ft, plug 5565 ft, swabbed mud and gas, to further test.

KINGS COUNTY—Ray Bisconer's No. 2, 11-24-20, sd 1650 ft. Central Calif. Ut lities Corp.'s Kettleman-Lakeview 3, 11-23-19, td 1202 ft, plug 1190 ft, sd. Dudley Ridge Dev. Co.'s No. 2, 24-23-20, dr sand 3800 ft. Kettleman View Oil & Gas Co.'s No. 1, 9-22-19, sd 4787 ft. Glen C. Stone's Teeter 1, 25-20-20, sd 1315 ft. Will drop from report. Tri-Counties Oil Co.'s Olson 1, 10-23-22, sd 5810 ft in shale. Carl W. Weller's Del Sable 1, 11-23-16, lcn.

MADERA COUNTY—Seaboard Oil Corp.'s Associated-General Pet., Gill 1, 27-12-15, dr gray sand 4210 ft.

SOLANO COUNTY—Amerada Pet. Corp.'s N. Hamilton 1, 36-4-2, td 4450 ft, gas well, shut in. Tracy Dr. Co.'s Hanson 1, 25-4-2, rig.

SAN MATEO COUNTY—Wilshire Oil Co.'s Cowell 1 (Half Moon Bay), 20-6-5, rur.

SUTTER COUNTY—Buttes Oilfields' No. 4 (Marego Olli), 2-15-1, td 5850 ft, gas well, shut in.

TULARE COUNTY—E. P. Jennings' No. 2, 33-23-23, dr shale 2620 ft. Amalgamated Oil & Gas Co.'s A. O. G. 3, 29-24-24, dr shale 2650 ft. Standard's Morris 1, 36-24-23, dr shale 7670 ft. Tulare Dome Oil Co.'s No. 1, 17-21-23, td 3120 ft, plug 2850 ft. L. E. Turner's Glaze 1, 15-22-26, sd 3282 ft, equip. removed.

YOLO COUNTY—Empire Oil & Gas Co.'s No. 1 (Woodland Area), 8-9-3, lcn. Standard's Cook 1, 32-12-1, td 1950 ft, running formation tester to test 1897 to bottom; Hooper 1, 32-9-1, td 3875 ft, fsh.

MONTEREY COUNTY — Amil A. Anderson's Hillman 1, 15-24-14, dr shale 2230 ft. California Oil's No. 2 32-23-15, lcn.

SAN LUIS OBISPO COUNTY—Burkholder Oil Corp.'s Clay 1, 14-10-26, td 3990 ft, rig burned. Hancock Oil Co.'s Dicks 1, 30-12-23, dr shale 1345 ft, showing oil in fractures. Dorothy Leingang's No. 1, 32-10-26, sd 410 ft. A. O. Lewis' Pecho 1, 34-30-10, td 2750 ft, recemented 6⅝ in at 2750 ft. Temblor Oil Co.'s No. 1, 22-31-21, td 3050 ft, swabbing mud and water. Vanguard Oil Co.'s Clark 1, 26-27-14, td 50 ft, dr water well.

SANTA BARBARA COUNTY—E. C. Arnold's Apache 2, 8-8-33, dr shale 6370 ft, oil in fractures. Crude Oil Dr. Co.'s Crude 1, 19-9-34, sd 515 ft. Gaviota Oil Co.'s Hollister 1, 35-5-33, dr brown shale 2995 ft. Hancock Oil Co.'s Los Alamos 2, 6-7-32, dr shale 5695 ft, good cuts. Leora Oil Co.'s Fithian 1, 8-4-25, sd 1025 ft. Midwestern Oil Co.'s No. L-1, 28-4-27, sd 2054 ft. Nine Springs Oil Co.'s Brinkinhoff 1, 9-7-30, sd 3300 ft. O. C. Fields' Santa Rita 1, 11-7-33, dr shale 2130 ft. Tide Water Associated's Leonis 1, 3-6-33, dr shale 2050 ft. United Western Oil Co.'s No. 1, 16-7-30, spudded 8/28, dr. Valley Oil Co.'s Chief 1, 20-9-34, sd 2315 ft. Vista Del Mar Oil Co.'s Williams 1, 16-4-24, dr shale 3566 ft, fair cuts.

SANTA CRUZ COUNTY—Elba Oil Co.'s Elba 1, 6-12-1, dr shale 3860 ft.

VENTURA COUNTY—El Rio Oils-Canada's El Rio 1, 6-1-21, td 3024 ft, pumping 20 bbls 11 gravity oil. Oxnard Oil Co.'s Vanoi 1, 10-1-22, dr shale 5052 ft. Richfield Oil Corp.'s McFarland 1, 13-2-21, dr shale 2852 ft. Seven Seas Oil Co.'s Johnson 1, 15-1-22, rur. Vaca Oil Explor. Co.'s Livingston 1, 6-1-21, td 3635

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ft, to run formation tester. Texas Co.'s Pierce 1, 20-2-21, dr gray sand 3825 ft.

SOUTHERN CALIFORNIA

NEWHALL—Barnsdall Oil Co.'s Rancho S. F, 2, 26-4-17, td 5090 ft, fsh dr pipe. Holbrook Pet. Co.'s Newhall Land 1, 28-4-16, dr hard brown shale 6245 ft.

PICO CANYON—A. G. Burt's No. 1, 36-4-17, sd 2060 ft.

NO. LONG BEACH — Geo. L. Clayton's Clayton 1, 32-3-12, td 552 ft, rep boilers.

FOX HILLS—Country Club Oil Co.'s No. 1, 19-2-14, sd 4986 ft.

PLAYA DEL REY—Robt. C. Hall's No. 1, 22-2-15, lcn.

PALOS VERDES—Hunter-Devlin & Associates' No. 1, 17-4-14, lcn. McClaren Bros.' No. 1, 27-4-14, td 3970 ft, redr to 1870 ft, pumping oil and water to sump; No. 2, 27-4-14, rig.

RAMONA HILLS—Royal Lands' No. 1, 8-4-17, lcn.

DEL REY-VENICE—Sharley Oil Co.'s Santa Monica Daries 1, dr dark brown shale 7290 ft.

PUENTE—Simaroo Oil Co.'s Stern 1, 33-1-9, lcn.

ORANGE COUNTY—Amalgamated Oil & Gas Co.'s Parr Com. 1, 22-3-9, lcn. A. S. Johnston Dr. Co.'s No. 1 (Sunset Beach), 20-5-11, dr sand and shale 4897 ft. Shell Oil Co.'s Harbeson 1, 9-4-10, dr sand and shale 5064 ft. West American Oil Co.'s Irvine 1, 14-5-9, td 6070 ft, to set whipstock and drill directional hole.

FLORIDA

LAKE COUNTY—Oil Dev. Co. of Fla.'s Gulf Expl. Co. 2, se se 17-24s-25e, elev 120 ft, arr acidize and re-test at 2600 ft, old td 6126 ft.

LEVY COUNTY—Fla. Oil Disvovery Co.'s Sholtz 2, sw ne 9-15s-13w, elev 25 ft, woc surf csg.

NASSUA COUNTY—St. Marys River Oil Corp.'s Hilliard Turpentine Co. 1, nw nw se 19-4n-24e, elev 110 ft, dr 3130 ft sandy lime.

KANSAS

BARBER COUNTY — Olson & Skelly Oil Co.'s Elsea 1, sw se nw 27-32s-14w, dr 3435 ft. Helmerich & Payne et al's Blunk Estate 1, cse 18-34s-13w, set 10-in csg 219 ft. W. I. Southern, Inc.'s Davis 3, se se ne 24-34s-15w, sg 4745-50 ft. Kansas Oil Corp.'s Mease 1, ne se se 27-30s-11w, rot rig.

BARTON COUNTY—Phillips Pet. Co.'s McClanahan 1, ne ne se 7-16s-13w, td 3377 ft, pot. 1782 bbls oil, comp. Ralph Wixon et al's Buhrle 1, se se ne 14-16s-13w, dr 2155 ft. Armes & Vernon O&G Co.'s Parsons 1, sw sw se 7-17s-13w, dr 1310 ft. Vickers Pet. Co.'s Lucas 1, nw nw ne 16-17s-14w, dr 2685 ft. C. L. Price et al's Hammeke 1, ne ne sw 12-18s-12w, testing. Helmerich & Payne's Sessler 1, sw sw se 29-20s-11w, 90 ft oih, 16 hrs; mostly wtr. J. B. Hanna et al's Luce 1, sw sw sw 21-20s-13w, dr 3563 ft. Brouk & Nat'l Ref. Co.'s Gory 1, nw nw sw 10-17s-13w, dr 60 ft. Shell Pet. Corp.'s Peterman 1, se ne se 13-16s-14w, dr 589 ft.

BUTLER COUNTY—Rex & Morris et al's Stephens 1, sw sw se 35-23s-3e, dr 1150 ft. Saco Oil Co.'s Cotton 1, sw sw se 16-28s-6e, td 3141 ft, D&A.

CHASE COUNTY—California-Illinois-Kansas Oil Co.'s Hughes 1, sw nw se 13-22s-9e, sdo.

CHAUTAUQUA COUNTY—C. L. Brosius et al's Garret 1, nw sw nw 26-32s-11e, td 1940 ft, pb to 1545 ft. Craft's Lagree 1, se nw ne 8-32s-12e, td 2080 ft, pb to 687 ft, est 4 bbls oil per day. Robinson et al's Foster 1, sw sw sw 6-33s-12e, testing. Harrison et al's Brown 1, ne se ne 19-34s-10e, dr 390 ft. S. H. Vineard's Hughes 1, ne ne se 13-32s-12e, td 426 ft, to skid 25 ft north. W. G. Buffington's Fisher 1, cwl sw nw 10-34s-9e, dr 700 ft.

COWLEY COUNTY—E. B. Shawver et al's Fee 1, nw ne se 3-30s-4e, swb down, est 25 bbls oil daily. Nat'l Ref. Co.'s Schwantes 1, nw sw ne 16-32s-3e, td 3431 ft, D&A. Pryor & Lockhart's Brown 1, ne se se 34-33s-3e, rur. C. R. Ross et al's Walker 1, nw nw se 5-33s-11e, td 2246 ft, D&A. G. M. Smith & C. L. Price's Henderson 1, sw sw sw 25-32s-6e, lcn.

EDWARDS COUNTY—Douglas & Gear's Meade 1, se se nw 35-25s-16w, dr 3917 ft.

ELLIS COUNTY—Earl Wakefield et al's Burnett 1, nw nw ne 1-11s-18w, dr 3065 ft. Billings' Smith 1, se se nw 14-12s-16w, pot. 572 bbls oil and ssw. Western Kan. O. & Ref. Co.'s Schmeidler 1, nw nw nw 22-12s-17w, sso 3550-55 ft. Lario O&G Co.'s Ball 1, nw nw ne 8-12s-18w, dr 1386 ft. P. G. Reynolds et al's Karlin 1, nw nw nw 13-12s-18w, dr 1400 ft. Skiles et al's Hensen 1, sw se ne 26-12s-18w, dr 2530 ft. Colonial Oil Co. & Bernheimer's Allbert 1, sw sw ne 31-12s-18w, dr 1260 ft. L. M. Reynolds et al's Polcyn 1, se se ne 24-13s-16w, dr 1730 ft. Brunson Drlg. Co. & Glimac Oil Co.'s Weisner 1, se sw se 31-13s-17w, dr 2735 ft. Aylward Prod. Co. et al's Berens 1, se se se 10-14s-16w, spd and sd. Buffalo Oil Co.'s Phillips 1, ne ne ne 18-14s-16w, dr 2230 ft.

ELK COUNTY—Coronado Oil Co.'s Atkinson 1, sw ne sw 22-29s-10e, dr 1400 ft.

ELLSWORTH COUNTY — Equity Gas et al's Razac 1, ne ne se 31-15s-10w, fsg 3002 ft. Colonial Oil Co.'s Hogy 1, nw nw sw 16-16s-10w, mim. Hinkle et al's Alden 1, se se sw 17-17s-10w, mim.

GRANT COUNTY — United Prod. Co.'s Blake 1, csw 21-30s-36w, co 2497 ft. Panhandle Eastern P. L. Co.'s Taggert 1, C sec 11-30s-37w, testing.

GRAY COUNTY—P. G. Reynolds' Watkins 1, csw 32-28s-28w, mim.

GREENWOOD COUNTY—Ward McGinnis et al's Henley 1, sw sw sw 25-25s-9e, set 6-in csg, woc. Eagle Oil Co.'s Stine 1, ne ne se 13-28s-10e, mim. S. Van Devanter et al's Dover 1, ne se sw 12-28s-11e, fsg 600 ft.

JACKSON COUNTY—Lemmick Oil Co.'s Marble Savings Bank 1, cne ne 26-9s-14e, rig.

KEARNEY COUNTY—J. L. Murphy's Masonic Home 1, cne 1-26s-36w, set 8-in csg 1465 ft, co.

KINGMAN COUNTY — Carter Oil Co.'s Davis 1, ce½ ne ne 24-28s-8w, dr 1700 ft.

LOGAN COUNTY—Morgan, Flynn, Cobb et al's McMillan 1, cnw 9-13s-37w, sd 3489 ft.

LYON COUNTY—Davis & Sory's Davis & Sory 1, sw sw se 32-21s-11e, 450 ft oih & ssw.

MARION COUNTY — Hutchinson O&G Co.'s Ehrman 1, se se sw 15-18s-1e, ur 8-in csg 2952 ft. Western Kan. O. & Ref. Co.'s Suderman 1, se sw nw 22-20s-2e, fsg 2947 ft.

McPHERSON COUNTY—C. E. Ash Drlg. Co.'s Broman 1, ne ne nw 19-17s-4w, fsg. Wamhoff et al's Nuse 1, se ne sw 18-18s-4w, sd 1850 ft. Fred C. Frank et al's Doles 1, ne nw ne 12-19s-1w, set 8-in csg 2775 ft, sd. Clyde Pulse et al's Boesker 1, se se nw 29-20s-1w, rig. C. R. Craft et al's Barnholt 1, sw sw se 30-20s-5w, pumping and testing. Boyle & Grossman's Diener 1, se se ne 35-19s-1w, ru.

MEADE COUNTY—Pacific Mid-West Oil Co.'s Rexford 1, ne se sw 8-30s-29w, dr 200 ft.

MITCHELL COUNTY—Geo. Siedhoff et al's Greiss 1, nw sw se 16-8s-10w, sd 4022 ft.

NESS COUNTY—Newton Dev. Co. et al's Tenny 1, nw nw se 19-18s-25w, td 4406 ft, 3500 ft oih, sd. Jones & Lane's Page Milling Co. 1, se se nw 36-18s-26w, dr 1253 ft.

OSBORNE COUNTY — J. E. Waldron's Neuschwanger 1, se ne nw 11-8s-14w, spd and sd. Fred C. Chaddox & Atlantic's Slater 1, ne sw ne 33-10s-15w, dr 2105 ft. F. E. Fullerton & Son's Moray 1, ne se sw 27-10s-12w, woc.

PHILLIPS COUNTY—C. W. Davidson et al's Ellis 1, se ne ne 35-5s-18w, sd 350 ft.

PRATT COUNTY — Atlantic, Empire & Skelly's Runyon 1, sw nw ne 11-27s-13w, 2500 ft oih. Skelly Oil et al's S. B. Adams 1, se nw ne 2-28s-11w, fsg 3720 ft .Stanolind O&G Co.'s Hartsell 1, nw nw sw 14-26s-12w, cel.

RENO COUNTY — Sam Schneider et al's Kroecker 1, ne ne ne 12-22s-5w, dr 1300 ft. Pryor & Lockhart's Stuckey 1, nw sw sw 31-25s-5w, td 4088 ft, D&A. Street & Butler's Kincaid 1, ne ne nw 13-24s-4w, rot rig. Carey et al's McPheeters 1, ne ne nw 22-26s-8w, ru. W. E. Witt et al's Fair 1, nw se se 4-22s-8w, fsg 2425 ft. Cohen et al's Teter 1, se se sw 3-23s-5w, rig.

RICE COUNTY—Gillespie et al's Strong 1, ne ne nw 9-18s-8w, spd and sd. John Hanna et al's Marshall 1, ne nw nw 30-18s-8w, sd 1515 ft. Bridgeport Mach et al's Habiger 1, nw nw nw 5-18s-10w, A w/5000 gals, gauge 12,500,000 cf gas and flo 525 bbls oil, 7 hrs. Skiles et al's Campbell 1, se se ne 28-19s-9w, ur 10-in csg 1965 ft. H. V. Holland et al's Brothers 1, se se se 12-21s-7w, flo 45 bbls oil 30 min. Gerbrand-Pulse Oil & Drlg. Co.'s Wellman 1, sw sw sw 22-21s-9w, set 10-in csg 1810 ft. Oread Oil Co.'s Erion Estate 1, nw nw nw 34-21s-7w, lcn. Bell O&G et al's Timbers 1, nw nw ne 8-21s-8w, cel. Elbar Corp.'s Ehlers 1, ne ne se 8-21s-9w, brr.

ROOKS COUNTY—W. W. Kiskadden et al's Ham 1, sw sw nw 25-7s-19w, rig. Graham et al's Fike 1, sw sw sw 9-9s-17w, td 3326 ft, p. 36 bbls oil and 48 bbls water, 8 hrs. C. R. Cfart et al's Ziegler 1, ne ne sw 8-10s-16w, rust. J. H. Lester's Methany 1, se se ne 29-20s-10w, fsg 3875 ft.

RUSH COUNTY—Wakefield et al's Zimmerman 1, se se sw 7-16s-18w, dr 2125 ft. Wakefield & Brouk's Kerbs 1, nw nw se 11-17s-16w, rig. Westgate-Greenland Oil Co.'s Hagerman 1, ne ne ne 20-19s-16w, sd 4030 ft.

RUSSELL COUNTY—H. C. Eisenhour et al's Krouse 1, se se nw 18-13s-12w, spd and sd. Empire & The Texas Co.'s Boxberger "B" 1, ne ne ne 23-13s-15w, dr 1355 ft. Park's Opdycks 1, sw sw sw 20-14s-13w, ru. Emrichs et al's Anderson 1, ne se sw 33-15s-11w, ru. Shell Pet. Corp.'s Batt 1, se se se 35-15s-14w, swb 300 bbls oil, 10 hrs. Cities Service et al's Eichman 1, csw sw se 12-15s-14w, dr 685 ft. Phil-Han Oil Co.'s Deines 1, ne ne nw 33-14s-14w, mim. Trapp Drlg. & Ramsey's Polcyn 1, ne ne se 34-14s-15w, br. Murfin & Vernon O&G Co.'s Pearson 1, ne ne ne 31-15s-15w, cel. Parks et al's Gorham 1, sw nw ne 35-15s-15w, cel.

SEDGWICK COUNTY—Home Stake Royalty Co.'s Roy McCormick 1, sw sw nw 23-25s-3w, dr 4052 ft. Roxanna Drlg. Co. et al's Woodman 1, sw nw sw 26-26s-1w, sd 2469 ft. Nat'l Ref. Co.'s Fee 1, se ne se 36-27s-2e, spd. I. W. Murfin et al's Martin 1, se se nw 32-28s-1e, dr 720 ft. W. C. Talbott et al's Downs Estate 1, se se nw 32-28s-2e, set 8-in csg 2205 ft, woc. Palmer Oil Corp.'s Royal 1, ne ne ne 15-28s-1w, sdo 3899 ft. Union O&R et al's Howell 1, sw sw sw 6-29s-1e, ur 12-in csg 1202 ft. E. B. Shawver et al's Furman 1, sw ne se 24-29s-3w, td 4153 ft, D&A. Fulton et al's Fee 1, ne ne se 35-28s-1e, dr 710 ft.

STAFFORD COUNTY—Newman & Winemiller's Sittner 1, ne ne ne 33-21s-12w, testing. W. P. Faulkner's Moses 1, nw nw sw 9-22s-13w, dr 350 ft. Stanolind et al's Hartnett 1, nw nw se 23-24s-11w, bailing mud. Kessler O&G et al's Jenkins 1, se se ne 15-25s-12w, rur. E. J. Shaffer's Spencer 1, nw nw sw 3-25s-14w, dr 2600 ft.

SUMNER COUNTY — W. M. McKnab's Blair 1, sw sw sw 7-30s-1e, ur 12-in csg 1387 ft. R. J. Wixon, Newton 1, se se se 21-30s-2e, otd 910 ft, set 12-in csg 1201 ft, co.

TREGO COUNTY—Phillips Pet. Co.'s Tre-

(see opposite page)
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go 1, cne nw 14-12s-23w, 2 bbls oil per hr, 3775 ft. Central Commercial Oil Co.'s Locker 1, csw 12-14s-22w, rur. F. L. Thorn et al's Koeppen 1, se se sw 31-14s-24w, dr 4279 ft. Thurman Hill et al's Lawson 1, sw sw nw 7-14s-22w, brr. R. E. McNely et al's Hille 1, cse ne 22-15s-24w, lcn.

WALLACE COUNTY—H. F. Wilcox O&G Co.'s Parker 1, se se ne 9-11s-40w, rur.

WOODSON COUNTY—Ward McGinnis et al's Smith & Jobes 1, nw nw se 10-24s-15e, td 1633 ft, gso & woc. Fred Rapp's Houghland 1, nw nw se 2-25s-15e, sd 1400 ft. Becker Bros.' Vann 1, cnw nw sw se 22-25s-14e, dr 140 ft.

NORTH LOUISIANA

BIENVILLE PARISH—De Soto O&G Co.'s Wm. Ashley 1, c sw se 15-16n-10w, 7-in csg 5475 ft, perf csg and completed at 5200 ft, est 25 mil ft wet gas, old td 5650 ft; Wm. Ashley 2, c sw se 15-16n-10w, mim. Hunt & Seaboard's Commercial Bank 1, c ne nw 3-16n-6w, elev 241 ft, base anhydrite stringer 5643 ft, massive anhydrite 5270-5510 ft, dr 6532 ft, lime and shale.

BOSSIER PARISH—L. W. Dennis' D. T. Roos 1, sw nw nw 13-19n-12w, mim. Triangle Drlg. Co.'s Schuler 1, se nw 13-17n-12w, dr 1318 ft shale.

CADDO PARISH—W. J. Hunter et al's N. B. Stoer 1, 10-15n-15w, elev 257 ft, perf csg 5100-20 ft, making est 1 mil ft gas, continues testing old td 6562 ft. Prairie River Synd.'s Hutchinson 1, sw nw 15-15n-12w, elev 153 ft, top lower Marine 8380 ft, top Bodcaw 8775 ft, missing drill stem test, td 8837 ft.

CONCORDIA PARISH—E. A. Addy et al's Pasternack 1, c nw sw 49-8n-9e, spd.

CLAIBORNE PARISH—J. R. Bevill et al's Alex Edmonds 1, ne ne 16-20n-5w, elev 160 ft, 2500 ft oih, wosr, td 5413 ft basal Glen Rose lime. R. Hal Compton's T. M. Kilgore 1, ne ne 12-20n-5w, lcn. J. B. Bond's Burgess 1, ne se ne 3-20n-5w, elev 273 ft, cemtd 5¾ in csg 5276 ft, pb to 5325 ft, testing old td 5800 ft. Lyons & Neely's Simms 1, c ne ne 32-20n-5w, rur. W. L. McClanahan et al's J. T. Lewis 1, sw se 25-20n-7w, rur. United Gas P. S. Co.'s Stevenson 1, se sw se 6-19n-5w, fsg 4872 ft. Brownfield 1, nw ne 6-19n-5w, owdd, td 4392 ft.

DE SOTO PARISH — E. M. Harter's F. Giague 1, se ne sw 26-11n-11w, dry abn, td 2918 ft. Paul Miller's Barron 1, ne sw 36-11n-11w, sw, abn, td 2945 ft. Pullman Oil Co.'s J. W. Ramsey 4, ne se nw 36-11n-11w, dr 2475 ft. Clear Lake Oil Co.'s J. A. Woolums 1, nw¼ nw¼ 29-12n-12w, arr deepen 1518 ft.

FRANKLIN PARISH—Jenson et al's Grayson 1, c ne 36-12n-6e, arr pb and perf at 1735 ft, old td 2516 ft. Tensas Delta Oil Corp.'s Woodland 1, sw se ne 22-11n-9e, dr 5690 ft shale.

LINCOLN PARISH—G. E. Burford et al's P. N. Hanna 1, w½ se 34-18n-4w, elev 269 ft, top anhydrite 4695 ft, mass anhydrite 4716-5160 ft, dr 5928 ft lime and shale. T. L. James & Co.'s Spencer 1, c w½ ne¼ 11-17n-4w, elev 365 ft, massive anhydrite 4892-5200 ft, dr 6460 ft lime and shale. Lide & Greer's Causey 1, nw ne nw 32-19n-2w, elev 341 ft, anhydrite 3997-4406 ft, top Travis Peak 5597 ft, pb cemtd 5 3/16 in csg 5304 ft, perf 5316-28 ft, completed est 60 mil ft wet gas, rock pressure 2150 lbs, old td 5822 ft. Ludel Oil Co.'s Gill 1, c ne ne nw 36-20n-2w, elev 249 ft, massive anhydrite 3698-3945 ft, dr 4042 ft lime. E. H. Moore's Commercial Bank-Williams 1, nw¼ nw¼ 22-18n-5w, spd dr 500 ft (using electrically operated rig). Gigantic Oil Co.'s R. L. Sanderson 1, nw se nw 30-18n-1w, elev 151 ft, spd woc surf csg.

MOREHOUSE PARISH—Rondeau et al's Clarke 1, 10-20n-7e, owdd, td 3755 ft.

NATCHITOCHES PARISH—Roy Raines et al's Allen 1, 22-9n-10w, sd 220 ft.

RED RIVER PARISH—Whitehurst et al's LeLong 1, ne nw ne 25-12n-11w, woc 250 ft. W. J. Hunter's Long Bell Lbr. Co. 2, sw nw sw 20-13n-9w, tested 4 joints oil, two joints sw, sd 3650 ft.

SABINE PARISH — E. Howard's Sabine Lbr. Co. 1, ne nw 24-9n-12w, rur. Romine et al's La. Long Leaf Lbr. Co. 1, c sw sw 7-5-12, 12½-in csg at 92 ft, woc. Odell-Hinson's Long-Bell Lbr. Co. 1, 5-8n-13w, acidizing, td 1800 ft.

UNION PARISH — Joe Modisett's Frost Lbr. Co. 1, ne sw 14-21n-1e, mim (7000 ft test).

WEBSTER PARISH—Magnolia Pet. Co.'s Aarnes-Cox 4, sw ne ne nw 22-21n-10w, elev 196 ft, dr 5630 ft shale. A. J. McCook 2, c sl n½ sw sw 22-21n-10w, elev 241 ft, completed 519 bbls distillate and 7 mil ft gas, td 8293 ft. Ohio's Bodcaw Acc. 2, 47, c sw se 15-21n-10w, elev 200 ft, dr 7483 ft shale. S. P. D. Coyle & W. Cox 1, c sw se 23-21n-10w, elev 211 ft, dr 6010 ft. Thos. Crichton Acc. 2, 2, c se ne 21-21n-10w, elev 217 ft, dr 7637 ft shale. R. L. Holloway B-7, c sw ne 23-21n-10w, elev 196 ft, dr 7340 ft shale. D. W. Merritt 1, c sw sw 14-21n-10w, elev 189 ft, 9⅝ in csg 5585 ft, woc, td 5600 ft. A. G. Oliphant et al's Sam Banks 1, 34-21n-10w, elev 196 ft, dr 7042 ft shale. Woodley Pet. Co.'s R. R. Cox B-2, sw sw 23-21n-10w, elev 229 ft, dr 6645 ft shale. Standard Oil of La.'s Davis 7, c ne nw 23-21n-10w, elev 196 ft, dr 5261 ft shale; Mrs. M. E. Gray 2, c ne nw 26-21n-10w, elev 237 ft, dr 5510 ft shale. V. L. Foster's J. M. Mixon 2, c se se 21-21n-10w, spd dr 520 ft.

WINN PARISH—Georgetown Oil Co.'s Tremont Lbr. Co. 1, 19-10n-1e, sd 1600 ft.

SOUTH LOUISIANA

ACADIA PARISH—W. C. Daniel's Setting 1, Trilby area, 17-9s-1w, dr shale 5110 ft. Humble's Federal Land Bank 1, North Crowley area, 34-8s-1e, woc 8400 ft; same operator's Sarver 1, South Crowley area, 35-10s-1e, dr shale 2154 ft. Magnolia's Duson 1, Iota prospect, 14-8s-2w, dk. J. G. Markley et al's Daigle Farm 1, Churchpoint area, 19-7s-2e, sdtr 3200 ft.

CALCASIEU PARISH—D & D Oil Co.'s Lutcher Moore 2, nw of Starks, 1-8s-13w, dr shale 8115 ft.

CAMERON PARISH—Humble's Miami Corp. 1, Premo area, 8-14s-5w, ru. Pure's State Mallard Bay 2, Mallard Bay prospect, 14-13s-3w, dr shale 7978 ft. Superior's Gulf of Mexico 1, in Gulf of Mexico, 4-15s-8w, building dk.

EAST BATON ROUGE PARISH—Cavalier's Elliott 1, n of Hope Villa, 3-8s-2e, sd 6157 ft.

EVANGELINE PARISH — Continental's Tate 1, Villa Platte area, 44-3s-2e, woc 9100 ft.

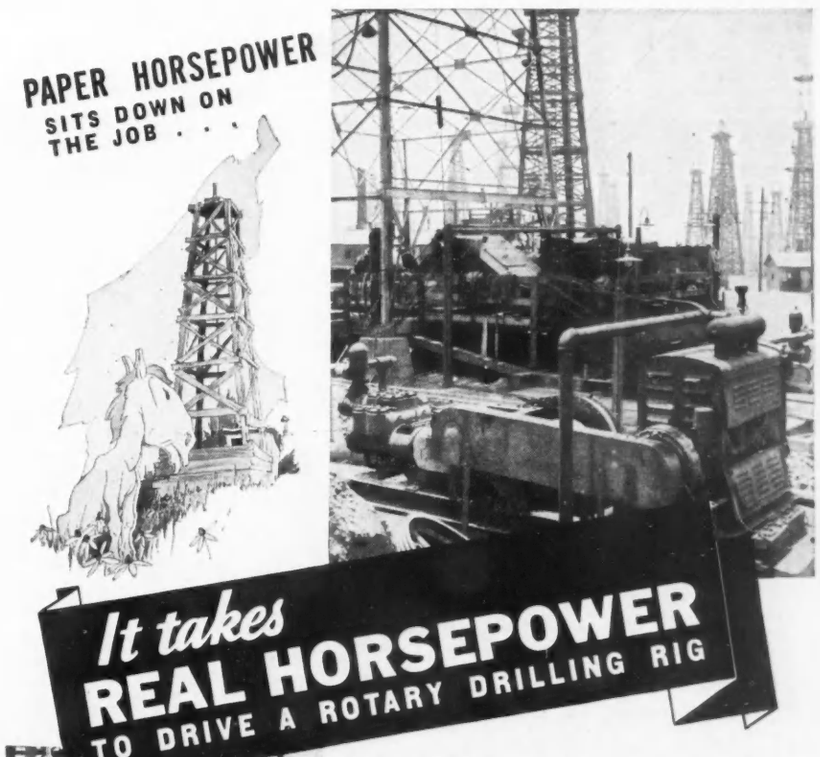
IBERIA PARISH—Jefferson Lake Oil Co.'s Lake Peigneur 414, Jefferson Island dome, 12s-5e, sd 7071 ft. Texas Co.'s State Vermilion Bay 2-B, in Vermilion Bay, 20-15s-6e, dr shale 1150 ft.

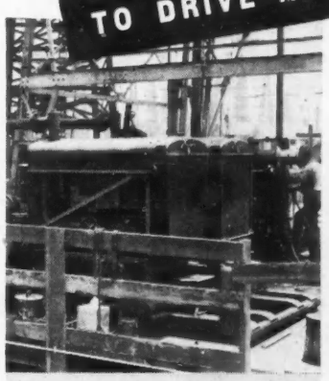
JEFFERSON PARISH—Triangle Oil Co.'s Carroll 1, 125-12s-11e, sd 3501 ft.

JEFFERSON DAVIS PARISH—Union Sulphur's T. R. S. Farms 1, South Roanoke area, 23-10s-4w, testing at 8614 ft.

LAFOURCHE PARISH—Amerada-L. L. E.'s South Coast 1, Raceland area, 34-15s-19e, dr shale 3378 ft. Gulf's State PP 3, Timbalier Bay, 36-23s-21e, coring shale 7010 ft.

LIVINGSTON PARISH—Neville & Grubb's





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Working in tandem, driving a rotary drilling rig at a well on Signal Hill, California, the two WOK Waukesha Engines shown are each delivering 136-162 real horsepower on natural gas. The Waukesha pumping engine in the foreground, connected to pumps by drive chain, is an old timer—a model WL-23-S, ten years old, but still going strong on a new rig.

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Evans 1, Mallet Bluff area, 47-7s-3e, washing 7656 ft.

PLAQUEMINES PARISH—Gulf's State QQ 3, Quarantine Bay, 17-19s-17e, dr shale 3650 ft.

ST. BERNARD PARISH—Southern Sulphur Co.'s State 2, Lake Borgne, 38-14s-15e, sd 3448 ft.

ST. JAMES PARISH—Continental's Realty Operators 1, Hester dome, 17-12s-5e, lcn.

ST. MARTIN PARISH — Texas Co.'s St. Martin Land 10, Henderson dome, 15-8s-7w, dr shale 5360 ft.

ST. MARY PARISH—Petroleum Heat & Power Co.'s Parro 1, nw of Charenton, 9-13s-9e, lcn. Texas Co.'s State Bateman Bay 1, South of Morgan City, 21-16s-12e, coring shale 10,731 ft.

TERREBONNE PARISH — Barnsdall Oil Co.'s Dibert, Starks, and Brown 1, n of Gibson field, 110-16s-15e, dk.

VERMILION PARISH — Continental's Brookshire 1, Abbeville area, 66-12s-3e, dr shale 11,641 ft.

MICHIGAN

ALLEGAN COUNTY—E. L. Andrew's Perrigo 1, sec 28-2n-13w, dr 130 ft. Champion Dev. Co.'s Young 1, sec 26-1n-12w, dr 600 ft.

ARENAC COUNTY—Joe Zucker's Reed 1, 10-19n-5e, dr 1820 ft. H. Linabury's Smith 1, sec 17-19n-6e, sd 2070 ft. Gordon Oil Co.'s State 1, 2-19n-3e, testing so 3015 ft.

GLADWIN COUNTY—H. J. Hand's Smart 1, 29-17n-2e, swabbing, td 3497 ft, Dundee 3414 ft, to acidize. Pollack-Gordon's Delbridge 1, 1-17n-2e, csg 6-in 1036 ft. Dibble Brothers' Kimble 1, sec 16-18n-1e, dr 3400 ft. D. E. Hughes' Cox 1, 12-19n-2w, sd 1400 ft. Whitehill et al's Bosley 1, 11-19n-1e, rig. Dapar Oil Co.'s Villeneauve 1, sec 4-20n-2w, ur 800 ft.

ISABELLA COUNTY—C. Weller's Cotter 1, 11-15n-5w, dr 1900 ft. Boston Oil & Gas Co.'s Fox 1, 23-15n-5w, dr 2400 ft. J. Peirce's Herman 1, 4-16n-3w, dr 1100 ft.

MISCELLANEOUS COUNTIES—Lake: Cherry Valley Oil Co.'s Rice 1, 25-18n-12w, dr 300 ft. Mecosta: McHardy Synd.'s Gingrich 1, 12-15n-7w, testing so 3864 ft. Missaukee: Rex Oil & Gas Co.'s Meekoff 1, 30-21n-6w, csg 5-in 3764 ft. Newaygo: Muskegon Dev.'s Carlson 1, 9-16n-12w, fsh 3150 ft. Otsego: Harley Williams' Raae 1, 15-30n-1w, dr 2600 ft. Barton & Williams' Yuill 1, 9-32n-3w, dr 400 ft. Roscommon: Seger & Swan's Barnett 1, 36-21n-1w, dr 3300 ft. Saginaw: Doran & Hilliard's Dobs 1, 33-13n-3e, sd 3030 ft. Tuscola: C. W. Spaulding's Dalrymple 1, 35-10n-7e, dr 2550 ft. Bay: C. Weller's Dwyer 1, nw nw sw, 20-16n-3e, lcn.

MISSISSIPPI

CALHOUN COUNTY—B. G. Dowell's H. D. Hughes 1, 18-23n-9e, dr 890 ft. Ed Spencer's J. C. Conner 1, se ne 12-24n-8e, mim.

FRANKLIN COUNTY—F. E. Coursen et al's Homochitto Lbr. Co. 1, 300 ft n c 18-5n-3e, dk.

KEMPER COUNTY—R. A. Keaten et al's Buckwalter Lbr. Co. 1, nec 6-10n-14e, dk.

LAMAR COUNTY—Sun Oil Co. et al's Mrs. Kate Talley 4, se nw 33-4n-15w, rur. South Miss. Oil Co.'s Morris 1, sec 4-2n-14w, dk.

HANCOCK COUNTY—American Sulphur Co.'s Ladner 1, sw nw 17-9s-14w, dr 2202 ft.

PIKE COUNTY — Acadian Prod. Corp.'s Bales 1, c se nw 24-7n-2e, dk.

WILKINSON COUNTY—Chas. Green et al's Julian Taylor 1, 4-3n-1e, elev 251 ft, coring 3618 ft.

YALABOUSHA COUNTY—Acme Holdings Co.'s S. D. Boyle 1, nw nw 33-25n-7e, rur.

MONTANA

BIG HORN COUNTY—E. L. Dana's Hardy 1, sw nw 22-9s-35e, mim

CHOUTEAU COUNTY—The Security Petroleum Corporation's Johnson 1, ne 23-26n-3e, dr 896 ft.

GLACIER COUNTY—W. E. Ullman's Allotted 1, csw 35-36n-8w, dr 3200 ft.

PARK COUNTY—Ben W. Ryan's Burgess 1, se sw nw 28-2n-11e, dr 630 ft.

TOOLE COUNTY—Model Oils, Ltd.'s Fey 1, cne sw 5-37n-3e, dr 2025 ft.

YELLOWSTONE COUNTY — Broadview Dome Oil Co.'s Halbirtter 1, se nw 18-3n-23e, dr 2600 ft.

NEBRASKA

JEFFERSON COUNTY—L. R. Page et al's Bonham 1, se se 31-1n-1e, dr 1045 ft.

KEITH COUNTY—Twentieth Century Oil Co.'s Stuken 1, nw nw 21-14n-37e, ru.

OKLAHOMA

ADAIR COUNTY—B. L. Maddox's Penn Mutual Life Ins. Co. 1, cs½ ne nw 5-16n-24e, dr 260 ft.

ATOKA COUNTY—A. L. Larson's Mason 1, sw se se 35-1n-14e, sd 2140 ft. C. M. Sheldon & Gardner Pet. Co.'s Lee 1, ne nw sw 2-4s-10e, spd 38 ft. Hagey et al's Becker 1, cne¼ 4-1n-13e, lcn. Hagey et al's Peck 1, cne¼ 6-1n-13e, lcn.

BECKHAM COUNTY — Mid-American Oil Co.'s Biscoe 1-A, sw sw sw 28-8n-22w, ur 6⅝ in csg.

BRYAN COUNTY—Southern Oil Co.'s Henry 1, cnw ne 10-8s-7e, lcn.

CADDO COUNTY—Clyde Becker et al's Pharris 1, se se nw 24-6n-4w, sdo 6235 ft. I.T.I.O. Co.'s Dome-Bo 1, cne se 29-6n-10w, dr 2065 ft.

CLEVELAND COUNTY—Harper & Turner's Pollock 1, cw½ nw nw 13-9n-2w, lcn. Hellenback's Norman 1, nw nw ne 17-9n-2w, dr by 6628 ft. Hellenback's Ward 1, sw se ne 30-7n-1e, dr 6410 ft.

CHOCTAW COUNTY—V. K. Chapman & Low's Hallum 1, nw nw ne 4-7s-20e, nach.

COAL COUNTY—Phillips' Beck 1, se sw sw 6-1n-9e, dr 2502 ft. Carter's Claytor 1, cw½ ne sw 27-2n-9e, dr 5165 ft.

COMANCHE COUNTY—J. W. Wolf's Costinus 1, sw sw se 30-4n-11w, spd. Frank Scott's Kuntz 1-A, se ne se 27-4n-11w, sd. Andrichak's Korthouse 1, nw ne sw 33-2n-18w, fsg 1005 ft.

COTTON COUNTY—Bowers & Wise's Pendergraft 1, nw se sw 4-4s-12w, der.

CREEK COUNTY—M. W. Mosier et al's Holcomb 1, se sw ne 19-18n-8e, td 3009 ft, dr plug. L. B. Jackson's Alberty 1, ne ne nw 25-18-9e, dr 2790 ft.

GARVIN COUNTY—Carter's Potts 1, ce½ se nw 36-1n-3w, dr 1825 ft. B.C.D. Edwards' Clark 1, ne ne ne 16-3n-3e, td 1491 ft, sd.

GRADY COUNTY—Gulf's Thomas 1, sw nw nw 14-4n-5w, set 7⅝-in csg 6909 ft, woc. Doyle Pet. Co.'s Huffine 1, nw nw se 30-5n-8w, der.

GRANT COUNTY—Carter's Crisman 1, cw½ sw nw 16-25n-3w, to core.

GREER COUNTY — J. I. Madlin et al's Broudie 1, nw nw nw 5-6n-20w, ru, sd.

HASKELL COUNTY—Continental's Ferguson 1, sw se ne 33-8n-20e, dr 6185 ft.

HUGHES COUNTY—Carter et al's Hamilton 1, cw½ ne sw 33-4n-9e, dr plug 5800 ft, P. 218 bbls oil net, 24 hrs, cut 17 percent sw. Phillips' Becker 1, ne nw sw 8-5n-10e, woc 540 ft. W. O. Allen et al's Barnard 1, sw sw sw 24-8n-8e, reshot w/20 & 60 qts, no incr. Texas Co.'s Cox 1, ne nw nw 23-9n-8e, pb 4060 ft to test Gilcrease. Moroney & Healey's Gield 1, cnw sw 11-9n-11e, hfw 3540 ft, sd. E. H. Moore's Buck 1, cnw sw sw 21-8n-10e, dr 3690 ft.

JACKSON COUNTY—Ace Gutowsky et al's Booker 1, nw nw nw 33-2n-18w, sdo 887 ft. Ace Gutowsky et al's Lee 1, nw nw se 36-2n-19w, lcn. W. W. Gutowsky et al's Howard 1, ne sw nw 10-3n-19w, sd 950 ft, tools in hole.

JEFFERSON COUNTY—Massad & Swansberger's Barrett 1, ne se se 14-6s-6w, td 1842 ft, rur.

JOHNSTON COUNTY—Patton et al's McCrummens 1, sw sw ne 16-1s-6e, sd 1165 ft. W. T. Shelton's Chapman 1, cnw nw 26-4s-6e, dr 1170 ft.

KAY COUNTY—Fortuna Oil Co.'s Harris 1, sw sw ne 14-25n-1e, sd 383 ft.

KIOWA COUNTY—E. L. Lippert's Miller 1-A, nw nw nw 14-2n-18w, fsg 675 ft. Kiowa Oil Corp.'s Finder 1, csw ne 4-6n-20w, sd. Hughes & Reese's Fultz 1, se se se 10-6n-18w, td 768 ft in Granite Wash, 200,000 cf gas. H. L. Wirick et al's Noske 1, se se nw 1-6n-17w, dr 600 ft.

LATIMER COUNTY—Clark Drlg. Co.'s Wilson 1, cse se 15-5n-18e, to test 2700 ft.

LINCOLN COUNTY—Continental's Community 1, nw nw se 7-15n-5e, dr 1095 ft.

LOGAN COUNTY — Anthony & Marshall's Fruin-Eckman 1, se se sw 4-16n-1e, sd 4975 ft. Sunray & Olson's Canning 1, sw sw ne 31-17n-1w, dr 3370 ft.

MAJOR COUNTY—Ed Parsons' Patzkowsky 1, cnw¼ 10-20n-11w, rig.

MARSHALL COUNTY—Paul Robb et al's Vittitoe 1, cne se 11-5s-4e, co to 720 ft, sd.

MURRAY COUNTY—Power Oil Co.'s Lancaster Trust Co. 1, csw ne 10-1s-2e, whipstock 3392 ft, dr by pipe 3417 ft. O. O. Owens' Fryer 1, ne se ne 34-1s-3e, sd 2547 ft. Meyer & Greenup's Arbuckle Royalty Co. 1, nw nw ne 18-2s-3e, sd 48 ft.

MUSKOGEE COUNTY—F. E. Cusack's Elliott 1, cnl nw sw 20-15n-20e, rog. Cusack's Fee 1, ne sw se 20-15n-20e, spd 65 ft.

NOBLE COUNTY — Seaboard Western Oil Co.'s Guthrie 1, nw nw ne 6-20n-2w, dr 2270 ft. Herndon Drlg. & Atlantic's Baggett 1, se se se 13-21n-3e, td 4250 ft, D&A. Darby Pet Co.'s McCoy 1, sw sw sw 24-23s-2w, bldg rig.

OKFUSKEE COUNTY—Burke-Greis' Rhea 1, sw sw se 14-10n-9e, lost bailer; to skid rig. F. W. Merrick's Mackey 1, ne ne sw 29-11n-10e, dr 3140 ft.

OKLAHOMA COUNTY—Frank Buttram et al's Cole 1, nw nw nw 16-14n-1e, dr 5485 ft. Ardie Oil Co.'s State 1, ne ne se 16-14n-4e, lcn.

OSAGE COUNTY—National Ref. Co.'s Page 2, nw sw se 28-22n-9e, lcn.

PAWNEE COUNTY—J. F. McManman et al's School Land 1, nw nw ne 16-21n-5e, rig.

PAYNE COUNTY—H. S. Brim et al's McKenzie 1, cwl se ne ne 13-18n-3e, c&p.

PITTSBURGH COUNTY—Okla. Dist. Oil Co.'s Beeler 1, ne ne sw 7-7n-14e, a w/3000 gals, no incr, sdo.

PONTOTOC COUNTY—Norbla Oil Co.'s McBride 1, ne ne sw 10-2n-5e, lcn. C. W. Roodhouse et al's Booth 1, se nw se 20-2n-6e, p 89 bbls oil, 24 hrs, comp. Union Dev. Co.'s Abbott 1, sw nw ne 34-3n-6e, dr pipe stuck 2500 ft. Kerlyn Oil Co.'s Pratt 1, sw se ne 6-4n-4e, dr 1665 ft. Boettcher O&G Co.'s Gann 1-A, se nw ne 25-4n-7e, fsg dr pipe 4347 ft.

POTTAWATOMIE COUNTY—Richborn Oil Co.'s Fidler 1, ne ne ne 9-5n-5e, ru & sd. Hightower's Baker 1, se se nw 27-6n-3e, rig. Roy S. Nash et al's Miller 1, cn½ ne se 29-6n-3e, td 4415 ft, sd for csg. British American Oil Prod. Co.'s Ramsey 1, se se ne 27-6n-4e, td 3819 ft, d&a. Mid-Continent Pet. Corp.'s Ne-Thah-Pea-Se 1, se se ne 24-11n-4e, si for tankage. Atlantic Ref. Co.'s Dooley 1, se se sw 9-11n-5e, td 4919 ft, d&a.

PUSHMATAHA COUNTY—Halliburton et al's Gabwell 1, sw ne ne 30-2s-15e, dr 4751 ft.

SEMINOLE COUNTY—Stanolind, Amerada and Mid-Continent's Salina 1, se ne nw 4-5n-6e, swb 23 bbls oil, 116 bbls wtr (sulphur), 10 hrs, swb down, to pb. J. F. Root's Cone 1, nw ne sw 11-7n-5e, c&p. E. W. Jones et al's Belford 1, ne se ne 9-9n-8e, dr 4597 ft. Atlantic and Gulf's Decker 1, sw sw sw 32-11n-6e, abd 4690 ft. Phillips Pet. Co.'s Gilcrease 1, nw nw se 16-7n-12e, dr 735 ft.

STEPHENS COUNTY — Coline Oil Co.'s Johnson 1, sw se ne 1-2n-8w, dr 9115 ft. Ed Parsons et al's Blake 1, csw nw 22-2n-8w, td 4966 ft, est 25 to 35 bbls oil daily, sdo. Newsom's Pfile 1, sw sw sw 1-2s-7w, sd 115 ft. Jack Cohen's Pierce 1, ne ne nw 24-2s-6w, dr 1300 ft. Carter Oil Co. et al's Harley 1, cne ne 24-2s-4w, td 8157 ft, si.

TILLMAN COUNTY—I.T.I.O. Co's Graham 1, se se ne 1-3s-19w, swb 523 bbls oil daily for 4 days. Gulf's Prichard 1, se nw se 32-3s-16w, dr 2590 ft. Tom Walker's Bowman 1, sw sw nw 10-4s-17w, sd 200 ft. Caven et al's Southerland 1, sw sw nw 35-4s-16w, ru, sd.

WASHITA COUNTY—L. B. McWhirter et al's Fee 1, nw sw sw 34-8n-19w, sd 1810 ft. John Koberg's Harms 1, nw nw ne 6-10n-16w, dr by 4200 ft.

WEST TEXAS

(This report is confined to north portion of the Permian Basin.)

ANDREWS COUNTY— M. J. Delaney & American Liberty Oil Co.'s H. A. Moore-Gulf 1, sec sw¼ PSL sec 12, blk A-20, elev 3178 ft, top anhydrite 1960 ft, shot 600 qts 4442-4572 ft, td 4579 ft, fsh tools. Drilling & Exploration Co. Inc.-Fuhrman Pet. Corp.'s Munger-Nix 1, c sw¼ PSL sec 20, blk A-47, lcn; Thornberry 1, sec nw¼ PSL sec 8, blk A-42, lcn. H. S.

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Forgeron et al's Lockhart-Brown 1, c ne ne PSL sec 20, blk A-41, sd 179 ft. Gulf Oil Corp.'s University 1-G, nec nw sec 8, blk 14, rur.

BAILEY COUNTY—Geo. Etz & E. H. Robertson's I. C. Enochs 1, c labor 66, league 182, Floyd CSL sur, sd 1970 ft. J. O. Whittington et al's McCelvey Bros. 1, c labor 15, league 161, Presidio CSL sur, lcn.

COCHRAN COUNTY—Devonian Oil Co.'s T. B. Duggan 1, nwc labor 11, league 55, Oldham CSL sur, mim. The Texas Co.'s C. C. Slaughter 1, (3492-ac), sw part league 130, Carrson CSL sur, elev 3808 ft, top anhydrite 2275 ft dr 4636 ft. P. N. Wiggins Jr.-C. Ed. Hyde et al's C. S. Dean-Slaughter 1, labor 26, league 92, Lipscomb CSL sur, elev 3730 ft, top anhydrite 2270 ft, top Yates 2868 ft, top lime 4220 ft, top pay 4995 ft, dr 5010 ft with 500 ft oih; C. S. Dean-Slaughter (Honolulu) 1, nec league 58, Martin CSL sur, dr 2175 ft.

DAWSON COUNTY—Ray Albaugh et al's Higgenbotham 1, labor 24, league 269, Moore CSL sur, lcn; D. Hogg 1, c se se TP Ry. sec 17, blk 34, T-4-N, elev 2895 ft, top anhydrite 1550 ft, cem 7-in 3560 ft, sd to rust. Ernest L. Wilson, Atlantic Ref. Co. et al's Scanlan Bros. 1, c nw nw of EL&RR Co. sec 83, blk M, elev 3111 ft, top anhydrite 2105 ft, top Yates 2880 ft, top lime 4460 ft, show o&w 4850-58 ft, lime pay 4924-34 ft, td 4965 ft, pb to 4933 ft to acidize.

GAINES COUNTY—Amerada Pet. Corp.'s C. M. Armstrong 1, c nw nw sec 456, blk G, CCSD&RGNG Ry. sur, elev 3612 ft, top anhydrite 2107 ft, top Yates 3035 ft, top 1st lime stringer 4020 ft, tested water 5079 ft, pb to 5059 ft, used 2000 gals acid, tested mostly water, to pb again; E. C. Brand 1, sec n½ sec 54, blk AX, rur at 218 ft; First State Bank (Seagraves) 1, c se se PSL sec 66, blk AX, dry and abd 2140 ft; R. A. Cox 1, nwc sec 380, blk G, elev 3554 ft, top anhydrite 2076 ft, salt 2190 to 2880 ft, top Yates 2955 ft, pay 4897-4952 ft, used 2000 gals acid, flowed 14 bbls per hr, then 31 bbls per hr after 4000 gals acid; S. E. Smith 1, nec PSL sec 382, blk G, dr 2025 ft; Flo Matthews 1, nec sec 417, blk G, elev 3557 ft, top anhydrite 2079 ft, salt series 2196-2819 ft, top Yates 2975 ft, top brown lime 3930 ft, top solid lime 4250 ft, mostly water at 5018 ft, pb to 5008 ft, sd for cable tools. Argo Oil Corp.'s E. H. Jones 1, c ne¼ PSL sec 2, blk A-7, elev 3669 ft, top anhydrite 2080 ft, salt series 2260-3025 ft, top Yates 3075 ft, 1st lime stringer 4340 ft, top solid lime 4630 ft, 1st oil saturation 5090 ft, show water 5096-5116 ft, inc water 5247-5296 ft, dry and abnd. Amon G. Carter et al's E. C. Brand 1, sec PSL sec 54, blk AX, lcn; Brand 2, nec se¼ sec 54, cem csg 225 ft; J. H. Sharp 1, nwc sec 47, blk AX, cem csg 2105 ft. A. G. Carter-Phillips Pet. Co.'s A. L. Wasson 1, sec PSL sec 48, blk AX, cem csg 210 ft. Continental Oil Co.'s E. H. Jones 1, c se ne PSL sec 22, blk A-7, elev 3650 ft, top anhydrite 2060 ft, base salt 3080 ft, top Yates 3140 ft, top lime 4020 ft, used acid at 4959 ft, swab 8 bbls per hr, dd to 5156 ft, tested sul water, pb to 5020 ft, tested dry, pb to Yates sand 3125-50 ft, tested dry and sd; E. H. Jones 2, c se ne PSL sec 1, blk A-8, rur. R. H. Gill et al's S. R. Simpson 1, near ne nw ne PSL sec 8, blk C-44, elev 3226 ft, dr 2240 ft. Ohio Oil Co.'s S. J. Averitt 1, c nw ne WT Ry. sec 228, blk G, dr 4260 ft. Phillips Pet. Co.'s A. G. Carter-Wasson 1, se se ne PSL sec 53, blk AX, elev 3558 ft, top anhydrite 2075 ft, td 4980 ft, used 1000 and 4000 gals acid and flowed 471 bbls oil 8 hrs, testing. Phillips Pet. Co.-I. T. I. O. Oil Co.'s E. C. Brand 1, se se ne PSL sec 55, blk AX, elev 3585 ft, top anhydrite 2140 ft, top salt 2245 ft, top Yates 3035 ft, top 1st lime 3990 ft, saturation below 4881 ft, td 4927 ft, used 5000 gals and 4000 gals acid, then swab 10 bbls per hr, dd to 5011 ft, acidized 3 times, total 10,000 gals, then dd to 5030 ft, testing.

HOCKLEY COUNTY—Frank A. Bates et al's S. S. & A. L. Lockett 1 (686-ac), 3790 ft fr s and 625 ft fr e lines PSL sec 5, blk 1, elev 3453 ft, top anhydrite 2250 ft, top salt 2330 ft, top Yates 2970 ft, top 1st lime 3990 ft, cem 7-in csg 4630 ft, td 4650 ft. Stanolind O. & G. Co.'s Alex Slaughter 1, c sw¼ labor 76, league 37, Zavalla CSL sur, elev 3518 ft, top anhydrite 2220 ft, top Yates 2821 ft, top lime 4150 ft, brown sandy-lime 4940-4975 ft, swabbed 2½ bbls per hr nat'l, used 2000 gals and 4000 gals acid, flowed 13 per hr and later 150 bbls 12 hrs via 30/64-in choke.

MARTIN COUNTY—Harris-Anderson Corp.'s Mrs. M. Robinson 1, sw¼ T&P Ry. sec 33, blk 36, T-1-N, lcn. J. L. Greene, R. C. Conkling & T R. Parker's O. B. Holt 1, labor 20, league 319, Garza CSL sur, rig.

TERRY COUNTY—H. B. Anthony-E. R. Rice & Illinois Oil Co.'s A. M. Brownfield 1, c nw¼ of EL&RR Co. sec 28, blk A-1, elev 3192 ft, top anhydrite 2236 ft, dr 4800 ft. R. L. Foree et al's W. E. Pool 1, c ne¼ PSL sec 54, blk D-11, elev 3447 ft, top anhydrite 2418 ft, base salt 3103 ft, top Yates 3138 ft, 1st lime stringer 4165 ft, top big lime 4592 ft, dr 5250 ft.

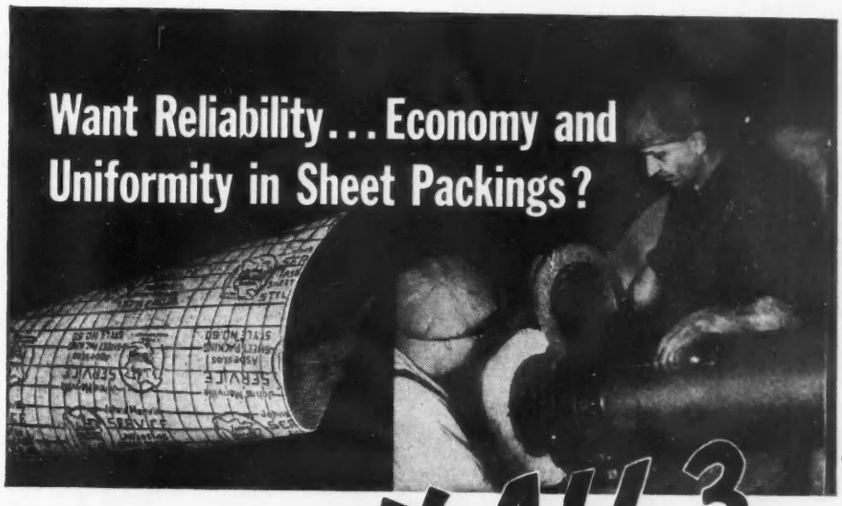
YOAKUM COUNTY—Bohago Oil Corp.-Bond Oil Corp.'s M. West 1, c se nw sec 606, blk D, J. H. Gibson sur, elev 3660 ft, top anhydrite 2230 ft, top Yates 3041 ft, top brown lime 4035 ft, lime pay 5183-5255 ft, used 1000, 3000 and 6000 gals acid, flowed 39 bbls oil 18 hrs, 25/64-in choke, shut in. Denver Prod. & Ref. Co.'s J. A. Whittenburg Est. 1, c nw nw sec 831, blk D, elev 3616 ft, top anhydrite 2170 ft, top saturation 4810 ft, lime pay 4960-5015 ft, used 14,000 gals acid, 3 treatments, corrected depth to 5001 ft, flowed 15 to 18 bbls oil hourly before shut in; C. A. Elliott 1, c ne ne sec 832, blk D, rur. Moore Bros. Corp. et al's Geo. Cleveland-Ohio 1, c ne ne sec 706, blk D, elev 3624 ft, top anhydrite 2210 ft, top salt 2280 ft, top Yates 3050 ft, top brown lime 4060 ft, top solid lime 4610 ft, td 5506 ft, tested sul w at 5425-75 ft, pb to 5328 ft. Siosi Oil Corp. et al's Ruth Bennett 1, sw sw sw sec 631, blk D, td 5277 ft, used 3000 gals acid and flowed 255 bbls 24 hrs then quit, to reacidize. Standard Oil Co. of Texas' M. B. Sawyer 1, c se se sec 576, blk D, dr 2575 ft. The Texas Co.'s W. F. Walker 1, c se se sec 794, blk D, elev 3656 ft, top anhydrite 2114 ft, top Yates 2990 ft, top solid lime 4450 ft, 1st pay 4916 ft, dr 5156 ft, swab 1 bbl oil per hr for 24 hrs at 5146 ft.

EAST TEXAS

ANDERSON COUNTY—Humble O&R Co.'s Suie Hassell 1 (80-ac), Jas. Beard sur, 2 mi n Jarvis, Trinity test, elev 361 ft, Pecan chalk 3453-3899 ft, Austin chalk 4350-4525 ft, top Woodbine series 4577 ft, top sand 4593 to 4598 ft, tested sw with trace oil, dry and abd.

BOWIE COUNTY — Russell & McGuire (was Fay T. Chew and Brasett's) B. Barkinson 1 (90-ac), J. W. Parkman sur, 2½ mi n Leary, elev 312 ft, sd 2851 ft. Ferguson & Hill's A. Y. Breckenridge 1 (412-ac), Nancy Dycus sur, 4 mi w Texarkana, top Anona chalk 1308 ft, top Blossom sand 2063 ft, sd 2950 ft. Woodley & Bentley's J. D. Lumpkin 1 (245-ac), John McDermott sur, 1¼ mi sw Dalby Springs, elev 290 ft, Annona chalk 1665-2090 ft, pb fr 4404 to 1300 ft, dr by junk, Austin chalk 2984-3191 ft, top Woodbine 3560 ft, Georgetown lime 3860-4360 ft, Fredericksburg 4410-4777 ft, sd 4844 ft.

CHEROKEE COUNTY—Merica Oil Co.-W. L. Stone's Cherokee Dev. Co. 1, A. J. Acker sur, 2 mi e Maydelle, lcn. Al C. Bierman et al's J. L. Strong 1 (181-ac), F. J. Anthony sur, 1 mi nw Mixon, elev 399 ft, Pecan chalk



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3208-3552 ft, top Austin chalk 4146 ft, sd in Woodbine 4496 ft.

ELLIS COUNTY—Gigantic Oil Co., Inc.'s C. H. Sullivan 1 (90 2/3-ac), Simon Garcia sur, 4 mi n Frost, top Paluxy 3018 ft, fsh 3700 ft.

FANNIN COUNTY—Stewart Oil Co. (was Art Glazier et al's) Nathan Young 1 (67.24-ac), S. H. Hitchcock sur, near Randolph, dr 1350 ft.

FREESTONE COUNTY—Holt, Young & Nannly's W. H. Chambers 1 (125-ac), W. D. Allison sur, 2¾ mi n Keechi, elev 426 ft, top Pecan chalk 3980-4690 ft, coring 5310 ft. C. E. Rossiter et al's J. P. Fulton 1 (441-ac), J. P. Fulton sur, sd 956 ft.

GREGG COUNTY — Humble & Gulf Oil Corp.'s E. D. Robertson 1 (11.4-ac), M. Mann sur, 2½ mi w by s of Longview, 4 mie e prod., elev 272 ft, Pecan chalk 2263-2737 ft, Austin chalk 3331-73 ft, top Georgetown lime 3373 ft, td 3375 ft, run cas.

HENDERSON COUNTY—American Liberty Oil Co. et al's E. B. LaRue-Johnson 1, blk 11, Phillip Jackson sur, 2 mi w LaRue, Trinity test, elev 464 ft, Pecan chalk 2765-2890 ft, Austin chalk 3807-4139 ft, dr 5105 ft. Tide Water Associated-Seaboard & Humble's McElreath-Suggett 2-C (149-ac), W. P. Wyche sur, 1½ mi nw Opelika, elev 452 ft, top Woodbine 4450 ft, top Georgetown 5070 ft, top Paluxy 6087 ft, top first Glen Rose 6282 ft, top anhydrite 6991 ft, massive anhydrite 7315-7713 ft, flowed water at 7830 ft, dr 8795 ft.

HOUSTON COUNTY — American Liberty Oil Co. et al's J. A. Bean 2 (31.05-ac), Wm. Burke sur, 1 mi n Grapeland, dr 2500 ft. Geier Bros. & F. B. Jackson's H. F. Moore 2 (135-ac), Henry Masters sur, 2 mi se Crockett, rig.

HUNT COUNTY—Bauersfield & Aue, Inc. (was Texola Land Corp.'s) J. M. Goin 1, (250-ac), Jas. Merrick sur, 2 mi sw Wolfe City, elev 606 ft, sd 1010 ft.

KAUFMAN COUNTY—J. M. Scott-J. B. Woodside et al's Wood & Temple Nash 1 (80-ac), Juan Cortez sur, 1 mi e Scurry, elev 401 ft, top Woodbine 2270 ft, top Georgetown 2849 ft, fsh 3015 ft

LEON COUNTY—J. W. Kelley & Fox's L. W. Bryant 1 (48-ac), A. M. Coulter sur, 1 mi ne Marquez, rig.

LIMESTONE COUNTY — Pure Oil Co.'s Kendrick 16-T (96-ac), 3 mi w Mexia and in field, elev 508 ft, top Woodbine 2896 ft, top Georgetown 3365 ft, top first Glen Rose 4270 ft, top broken anhydrite 5132 ft, top Travis Peak 5656 ft, dr 6985 ft. Stanolind O&G Co.-Ramsey Pet. Corp.'s T. Norris 1 (40-ac), K. Thrasher-H&TC Ry. sur, 5 mi n Kosse, Trinity test on Thornton fault, elev 528 ft, top Midway 210 ft, top Navarro 770 ft, sd for water 2325 ft.

MORRIS COUNTY — Joiner Oil Corp.'s Morris Sheppard 1, MEP&P Ry. sur, 3 mi nw Naples, elev 315 ft, dk. Jim O. Whittington et al's C. D. Browne-Joiner Leasing Co. 1 (320-ac), T. C. Ry. sur No. 734, 8 mi nw Naples, dr 2030 ft.

NAVARRO COUNTY—Mues & Low's (was L. N. McCulloch et al), Berry Bros. 1 (35-ac), W. W. Moss sur, 1 mi n Dawson, Austin chalk 751-1060 ft, top Woodbine 1384 ft, sd 1600 ft. Mrs. Jane Robinson et al's Fortsan Bros. 1, Eli Smith sur, 5 mi ne Corsicana, sp and sd. Tom Sharp et al's E. E. McDowell 1 (65-ac), T. J. Jordan sur, ¼ mi s Bazette, sd 2300 ft.

RUSK COUNTY—J. W. Shipman et al's Citizens Nat'l Bank-L. T. Burton 1 (125-ac), J. J. Y'Barbo sur, 4 mi ne Henderson, elev 432 ft, base Georgetown lime 3676 ft, sd 4500 ft.

VAN ZANDT COUNTY—P. E. Hill et al's J. L. Chitty 1 (49½-ac), M. Neal sur, 12 mi s Canton, sd 1700 ft.

EAST TEXAS BORDER COUNTIES

HARRISON COUNTY—J. B. Bond's Bailey & Martin 1, Geo. Martin sur, elev 299 ft, top first anhydrite stringer 4821 ft, base 4838 ft, top massive anhydrite 5378 ft, dr 5420 ft. Highway 80 Oil Co. of Texas' Mable George 1, J. S. Powell sur, elev 279 ft, sd 2506 ft.

MARION COUNTY—Ark. La. Gas Co.'s J. P. Fant 1, L. P. Cadenhead sur, elev 336 ft, top Red Beds 3747 ft; top anhydrite 5378 ft, tested some oil 6178 ft, arr pb to Henderson sand; Emma Ford 2, A. de los Santos Coy sur, mim. Mid-Continent Pet. Co.'s Sory 2, A. de los Santos Coy sur, top anhydrite 5339 ft, 7-in csg 6073 ft, woc, td 6108 ft; Sory 3, A. de los Santos Coy sur, elev 264 ft, massive anhydrite 5525-5770 ft, top Hill sand 5905 ft, Henderson sand 5992-6010 ft, top Gloyd 6010 ft, tested est 65 mil ft gas, setting short string csg, td 6054 ft; Sory 4, rur. United's J. H. Hutchinson 2, A. de los Santos Coy sur, dr 4515 ft. United's J. H. Hutchinson 3, A. de los Santos Coy sur, rur. United's J. H. Hutchinson 4, A. de los Santos Coy sur, dk. Hunter Co.'s Fonda 3, A. de los Santos Coy sur, base massive anhydrite 5910 ft, Henderson sand 6127-49 ft, acidizing, td 6151 ft. Fohs Oil Co.'s Mary McReynolds 2, A. de los Santos Coy sur, dr 5305 ft. Gulf's Lizzie Henderson 2, R. Bennington sur, rur. Holcomb & Thomasson's Hilliard & Womack 1, R. Bennington sur, elev 270 ft, top anhydrite 5315 ft, massive anhydrite 5572-5812 ft, flowed 378 bbls oil in 12 hours through ¼ inch choke, cp 1200 lbs, tp 600 lbs, td 6050 ft. Shell Pet. Co.'s Henderson 1, R. Bennington sur, elev 232 ft, dr 4215 ft.

PANOLA COUNTY—Danciger O&R Co.'s J. W. Tatum 1, Alfred Bissell sur, elev 193 ft, coring 5380 ft. Magnolia Pet. Co.'s E. A. Hull 2, Thos. Applewhite sur, elev 222 ft, dr 8173 ft.

SHELBY COUNTY—Portex Oil Co.'s Pickering Lbr. Co. 3, A. Hanson sur, elev 213 ft, completed as six million ft gasser with 42 bbls distillate daily, td 5090 ft. Allen et al's George 1, C. C. Tutt sur, elev 349 ft, top chalk 2450 ft, dr 2790 ft. Logansport P. L. Co.'s Rushing 1, Mannon Smith sur, sd 3010 ft.

SOUTH TEXAS

SAN ANTONIO DISTRICT

BASTROP COUNTY—J. W. Bibb et al's B. Lentz, Freeman Wilkinson sur, td 210 ft, sd in sn. H. & H. Drilling Co.'s Earl C. Erhard 1, Knight & White lg, Hills Prairie community, td 40 ft, woc. Hantho-Nelson's K. M. Litton 1, Addison Litton sur, td 2311 ft, Buda, top Buda 2262 ft. R. Olsen Oil Co.'s Mattie Murchison 1, Addison Litton sur, testing at 1925 ft.

BEXAR COUNTY—Edna May Oil Co.'s Mrs. C. N. Cassin 1, F. Rodriguez sur, td 1349 ft, on pump, est 25 bbls. L. K. Oil Co.'s William A. Russell 2, F. Rodriguez sur, sd 1240 ft. J. O. Williams et al's A. W. Bitter 2, Jose M. Baerrera sur No. 58, dr shale 150 ft.

CALDWELL COUNTY—B. C. Armstrong et al's Wilson Bell 1, Solomon Seal sur, sd in marly shale 2465 ft. Brady Bros. and Pummel's A. B. Jackson 1, S. Morris sur, set surf cas dr 90 ft. Chisholm & Associates' F. Lane 1, Byrd Lockhart sur No. 8, sd 1810 ft. Lanning and Coffield's W. R. Trammell 1, Guadalupe College sur, dr 1275 ft. Padua Pet. Corp.'s W. J. Cooper 1, Solomon Seal sur, td 2650 ft, initial prod 10 bbls on pump.Taylor Ref. Co.'s S. Punch 1, Guadalupe College sur, td 255 ft, dr shale; F. Stacey and M. F. Harwood 1, E. Tyson sur, dry in Edwards lime, pulling csg to test so in Austin chalk, top chalk 991 ft.

COMAL COUNTY—John R. Yates' Erhard Heidrick 1, A. M. Holbrook sur, td 215 ft, lime, abn.

DIMMITT COUNTY—Wilcox O&G, Light Ranch (Luminar) 2, sec 29, dr 5915 ft; Light Ranch (Myssie) 3, sec 13, shale at 3467 ft.

EDWARDS COUNTY—Amon G. Carter et al's F. J. Sweeten Ranch 1, GC&SF sur, dr 4575 ft.

FRIO COUNTY—Amerada's Harrigan 1, sur No. 306, td 6410 ft, si, making little oil. H. A. Pagenkopf & L. C. Jamieson, Houston Estate 1, Juan Figuerroa sur, preparing to dr plugs at 40 ft.

GUADALUPE COUNTY—T. H. Coulter's August Engelke 1, Harriet Cottle sur, abn 2012 ft. Diamond Half Oil Co.'s E. Bibbs et al 2, Joel D. Robinson sur, td 2516 ft, wash wh.

KENDALL COUNTY—J. E. Landon and D. F. Peffley's C. A. Sidensticker 1, A. Rodriguez sur, dr lime 570 ft.

LEE COUNTY—James E. Pederson's C. A. Turner 1, David Hudson sur, td 6560 ft, acidized with 5000 gals, used 200 bbls oil as inhibitor, swabbed little oil, si, sdtr to 6132 ft, sand 6030-70 ft.

MAVERICK COUNTY—Rheingold & Rueben (Rio Dev. Co.), Johnston 1, I&GN RR blk 16, td 1800 ft, ur 6⅝ in csg to 1805 ft, fsh for 300 ft cable line. Wellington Oil Co.'s Chittim Ranch, coring 2995 ft, hard lime.

MEDINA COUNTY—R. S. Bolling et al's A. C. McMenemy 1, sec 33½, lcn. Kelfar Oil Co.'s Flora H. Briscoe 1, Aloys Schmidt sur 8, dr 2035 ft in Navarro.

TRAVIS COUNTY—R. M. Kyle's W. D. Hunter 1, J. Burleson sur, td 627 ft, shale.

WILSON COUNTY — Pat Higgins' Mary Dickey 1, M. Rodriguez sur, dr shale.

MIRANDO DISTRICT

DUVAL COUNTY—V. L. Blanchard's Rosa V. de Puig 1, sec 8, Sweden Farm lots sub, Santos Flores gr, 5437 ft, flowed 63 bbls in 24 hours, ⅛ in choke, tubing pr 475, casing pr 900. H. and H. Drilling Co., J. F. Welder 1-A, in sw part Samuel Alezander sur 102, td 2658 ft, abn. Magnolia's DCRC 1, sur 259, dr 2455 ft. Navarro Oil Co.'s Standard Trust Co. 1, E. E. P. Irr. & Mg. sur, 6 mi sw Driscoll field, spd. Parr and Delaney Oil Co.'s F. Vaello Puig 12, San Andres grant, dr st test 4742-65 ft, 412 pounds gas, no oil, waiting on order. Penn-Palangana Oil Co. et al's C. K. Gravis, sec 254, 3 mi ne Gravis producer on Palangana dome, td 6165 ft, fsg for 5000 ft of dr st. H. J. Porter's C. D. Sevier 1, blk 14, sec 754, in J. A. Cuellar gr, dr 2007 ft. Porter, Talbot and Dorn's 1, Montemayor 1, sub 2, share 4, Las Anacuas gr, 5 miles se Benavides, dr water well. V. G. Schimmel's E. R. Hagist 3, nw¼ BBB&C sur, sec 4, dr below surf csg. Speed Oil Co.'s Gruy Estate 1, sec 389, dr 2057 ft. Standard of Kansas' Southland Life Ins. Co. 1, Ball Ranch, Agua Poquita grant, td 4775 ft, comp, 188 bbls, 3/16 in choke, tubing pr 500, casing pr 750, sand 4767-75 ft. Standard of Texas' Gruy Estate 4, sec 154, woc 180 ft. G. Stratton & Baltimore's W. F. Afflerbach 1, center of sur 342, sd 1176 ft. Sun's G. Rodriguez 2, J. C. King sur, td 2818½ ft, flowed 65 bbls fluid 5 hours, ⅛ inch choke, 3 percent water, 1 percent sand, tubing 260, casing 700 lbs, full sand 2799-2818 ft. E. Renshaw Thomas Estate's E. V. de Pena 1, Small sec 8, cor upper Jackson at 3050 ft. Tsesmelis and Reese's Juan Canales 2, blk 75, subd of Juan Canales Ranch, San Juan grant, cor 3291 ft.

JIM HOGG COUNTY—French Oil Corp.'s Paula V. de Garza 5, blk 14, sur 39, lcn; M. Vela 1, sur 573, El Peyote gr, abn 3887 ft.

McMULLEN COUNTY—Adams & Lefevre Margaret Selman 1, sec 58, A. Spaulding grant, td 65 ft, setting 10¾ in csg. Alabama Minerals' Margaret Gordon 1, AB&M sur 127, td 2537 ft, run electric formation tester, cored solidly 1900 ft to td, all sands show sw, will abn. W. L. Hinds' Douglas W. Rhodes 1, sec 54, H. Nadler sur 17, abn 2008 ft. J. T. Lanier's E. R. Hagist 1, sur 458, abn 2485 ft. Rowan and Nichols' Douglas W. Rhodes 1, sec 22, Lowe sur, dr 2095 ft. C. C. Shumway's Shiner Ranch 11, G. J. Goode sur, ¾ miles south Nueces river, lcn.

STARR COUNTY—Dean Brothers' Miguel Valadez 1, east 2/7 portion 84, dr 1695 ft. J. W. Edwards' Quirino Vela 1, blk 6, El Tanque subd, por 84-85, spd. Gilcrease Oil Co.'s Kelsey-Bass 1, sec 11, portion 75, td 2947 ft, fsg. Henshaw Brothers and Davis' M. M. Garcia 1, tr 40, por 89, 2½ miles north of Barbacoas discovery well, ru. K. E. Merren's Starr City Cattle Co. 1-A, Jefferies & Lambeth subd in por 89, td 5615 ft, ran tubing, washing in with oil. Henry Mode et al's Starr County Cattle Co. 1, Jefferies and Lambeth subd, por 88, abn 3107 ft. Moss & Heard's S. B. Rickaby 5, por 83, w½ J. of Camargo, abn 1807 ft. The Texas Co.'s A. V. Guerra 6-A, por 67, J. of Mier, td 3653 ft, flowing some gas, 8 bbls per day, 1 inch choke. Transwestern Oil Corp.'s T. B. Slick School 1, sur 266, cutting dr st at 5374 ft.

WEBB COUNTY—Adams and Lefevre's E. Garcia 1, Los Ojuelos grant, sur 592, dr water well. J. E. B. Boone's Pearl H. Masterson 1, CCSD&RGNG sur, sec 21, dr 920 ft. N. V. Duncan & Oklahoma Co. of Texas' Ft. Worth National Bank 1, n¼ sur 466, spd. French Oil Corp.'s J. M. Garcia 3, sur 1121, td 2100 ft, dr st test Mirando sand recovered 100 ft oily

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mud, no pressure, ¼ and ⅜ inch chokes, 40 minutes, dr plgs. J. W. Magee's E. Garcia 1, blk 21, Henry James subd, coring 1950 ft.

ZAPATA COUNTY — Fansler-Moore-Murray's Gopher Trust Est. 2, sur 6, Fullerton subd, abn 2235 ft. Eugene Mays et al's A. G. de Flores 1, Dorothy subd, Charco Redondo gr, waiting on water at 1212 ft.

CORPUS CHRISTI DISTRICT

ARANSAS COUNTY—Barnsdall's K. Edwards 1-A, Wm. Lewis sur, td 9785 ft, wocs 7-in csg at 8164 ft, sdtr, td 8267 ft.

BROOKS COUNTY—Mills Bennett's W. W. Jones 1, G. Sanchez sur, dr 6035 ft. Standard of Texas' Mestina O&G Co. 2 (lse 2), R. G. Salinas sur, dr 2295 ft.

COLORADO COUNTY—Coyle-Concord Oil Co.'s Mary E. South 2, I&GN sur No. 41, cored oil sand 6030-6 ft, good so on dr st test, set csg, woc.

DE WITT COUNTY—G. M. Richardson's W. D. McCurdy 1, 10 mi ne Cuero, dk.

HIDALGO COUNTY—Dee Davenport et al's Hidalgo County Water & Improvement District No. 6, dr 500 ft. Felmont Oil Corp. et al's Mayer & Weill 1, tr 1, por 47, td 4910 ft, cor shale. Y. & B. Oil Co.'s Waite Brothers 1, sh 382, Los Ejidos gr, dr 3110 ft.

JACKSON COUNTY—The Texas Company's C. E. Niebuhr 1, O. S. York sur, dr 5220 ft.

JIM WELLS COUNTY—Magnolia et al's A. A. Seeligson 7, Los Jaboncillos sur, td 6508 ft, recovered 6105 ft of st dr pipe, cutting out remaining 398 ft. Wolcott & Rehmet's Chas. Wolcott 1, Tr. 23, W. H. Sartain & Co. Farm Lots sub, 7 mi w Orange Grove, lcn.

KARNES COUNTY — Ivan Howard's W. Moczygamba 1, E. Seguin sur 5, dr 650 ft.

LIVE OAK COUNTY — Mills Bennett's Watson & Shipp 2, P. Salinas sur, lcn. Charles Hannah's C. H. Wedding 1, Brigida Haughy sur No. 1, dr 760 ft. Bob Holland & H. Coquat's Matikin 1, Al Glavecke sur No. 1, td 1512 ft, dr plgs, csg seat gave way, recemented (squeeze job), woc. Unit Pet. Co.'s W. O. Nichols 1, Simon Ryan sur, cor at 1182 ft. George V. Viteri's Fee 1, G. Gerlach sur, ne outpost Ezzell field, lcn.

NUECES COUNTY—Camp Prod. Corp.'s C. Phillip Wardner 1-A, Paso Ancho Abajo and Paso Ancho Ariba surveys, cor 5990 ft. Seaboard's James P. Luby 2, Luby subd, Canutillo Ditch Colony sur, td 5059 ft, prep to dr plgs. United Prod. Corp.'s T. S. Schroeder 1, A. F. de la Fuentes sur, cor below 6593 ft. Wellington & Seaboard's W. F. Lehman 1-B, sec 25, Laureles Farm tracts, sd 5006 ft. Sam E. Wilson, Jr., J. F. Herold 1, Villereal sur, dr 6625 ft.

SAN PATRICIO COUNTY — Argo Oil Corp.'s A. Soehnge 1, in Delgado grant, 1½ miles n of Mathis, building derrick, digging pits. Danrey Oil Co.'s Jean Davis 1-A, Wm. Boyd sur, td 7117 ft, set 5-in csg at td, perforation about 7100-5, prep to test. F. P. Schwab's H. A. Smith 1, Juan Hart & Sons grant, dr 2707 ft. Waterbury Oil Corp.'s Jean Davis 1, G. W. Grover sur, spd.

VICTORIA COUNTY — Gulf's Mahon & Buehler 1, W. C. Carroll or J. Poietevent sur No. 2, dr 2737 ft. Magnolia's Willie Beck 2, T.N.O. RR sur No. 1, dr 3340 ft. Stanolind's Henderson & Pickering 1, E. Benavides sur, dr shale 4019 ft. Transwestern Oil Co.'s A. M. McFaddin 1E, F. Lewers sur, td 4413 ft, flowing 8 bbls per hour, ¼ inch choke, tubing 90 lbs, casing 575 lbs, 21 gravity. Wallace & Sollars et al's Etta B. Terrell 1, E. McDonough sur, 12 mi sw of Victoria, mim.

WILLACY COUNTY—Shell et al's Yturria Cattle Co. 2, San Juan de Carricitos gr, dr 6410 ft.

TEXAS GULF COAST

BRAZORIA COUNTY—Jack Frazier's Temple Lumber Co. 1, e of Bonney, H. & T. B. Section 35, dr shale 7409 ft. Pure's Slade 1, Peach Point area, S. F. Austin Survey, Abstract 20, milling 8397 ft.

CHAMBERS COUNTY—Ingot & Merit Oil Co.'s Wright Land Co. 1, Cedar Bayou area, C. Smith sur, dr shale 4109 ft.

COLORADO COUNTY — Coyle Concord's South 2, Garwood area, I. & G. N. No. 41, running tubing at 6034 ft.

FT. BEND COUNTY—Humble's Schulze 1, Needville area, R. Hodge sur, dr shale 2385 ft. Research Oil Co.'s Moore 1, ne of Orchard, S. Kennedy sur, dr shale 5978 ft. Windward Oil Co. & H. B. Ownby's Simms 1, e of Beasley, H & T. C. Section 1, dk.

GALVESTON COUNTY — Maco Stewart's Maco Stewart 1, Hitchcock area, J. Spillman sur, taking potential test at 5156 ft.

HARDIN COUNTY—Coronado Oil Co.'s Ryan 1, Hathaway area, J. G. Bell sur, dr shale 1936 ft.

HARRIS COUNTY—Texas Gulf's Moore 1, Aldine area, W. C. R. R. Sec. 18, dr shale 4498 ft. Superior's Butler 1, Bammel area, J. Ehrhardt sur, comp. 4,000,000 cu ft gas at 6175 ft.

LIBERTY COUNTY—O. C. Carvey's Weaver 1, nw of Cleveland area, J. Devers sur, dr shale 3508 ft. Humble's Sabine Tram 2, Devers area, M. Whittington sur, dr shale 5003 ft.

MATAGORDA COUNTY — Continental's Hawkins 2, D. McCarthy sur, dr rock 8294 ft.

NEWTON COUNTY—Houston Oil Co.'s Peavy Moore Lbr. Co. 1, H. & T. C. No. 42, dr shale 6251 ft.

WHARTON COUNTY—Buck & Holt's Rainer 1, Blue Basin area, F. C. McReynolds sur, mim.

UTAH

GRAND COUNTY—Cane Creek Oil Co.'s Government 1, nw sw 31-26n-21e, dr 300 ft.

WYOMING

ALBANY COUNTY—Ohio Oil Co.'s D. J. Griffin 1, se sw 2-21n-77w, ru.

CARBON COUNTY—Ohio Oil Co.'s Wyoming Oil & Gas Co. 1, csw sw 29-27n-89w, dr plug.

FREMONT COUNTY—Stanolind Oil & Gas Co.'s Johnson 1, cse se 3-33n-96w, digging cellar.

NATRONA COUNTY—General Petroleum Corporation's Government 1, nw nw se 21-35n-77w, derrick completed, ru tools.

NIOBRARA COUNTY—W. A. Maupin et al's Berggren 1, nw 23-35n-63w, ru tools.

SWEETWATER COUNTY—Mountain Fuel Supply Co.'s W. L. Williams 1, s ne 5-21n-95w, waiting on completion of water well.

Turbine Pumps

Fairbanks Morse & Company, 900 South Wabash Avenue, Chicago, has two new bulletins to describe the Fairbanks-Morse line of deep-well turbine pumps with enclosed impellers. Bulletin 6920 deals with oil-lubricated units used for most applications; Bulletin 6920R covers water lubricated units, which are used where the water must be kept pure and clean and oil lubrication is not permissible.

Both types, oil and water lubricated, are available in sizes from 4- to 16-inches and in capacities from 10 to 2300 gallons per minute with lifts ranging to 400 feet. They are efficient pumping units, requiring a minimum of power, and have a record for low maintenance cost. Heads can be furnished for belt, gear, combination motor and belt, and combination motor and gear drives.

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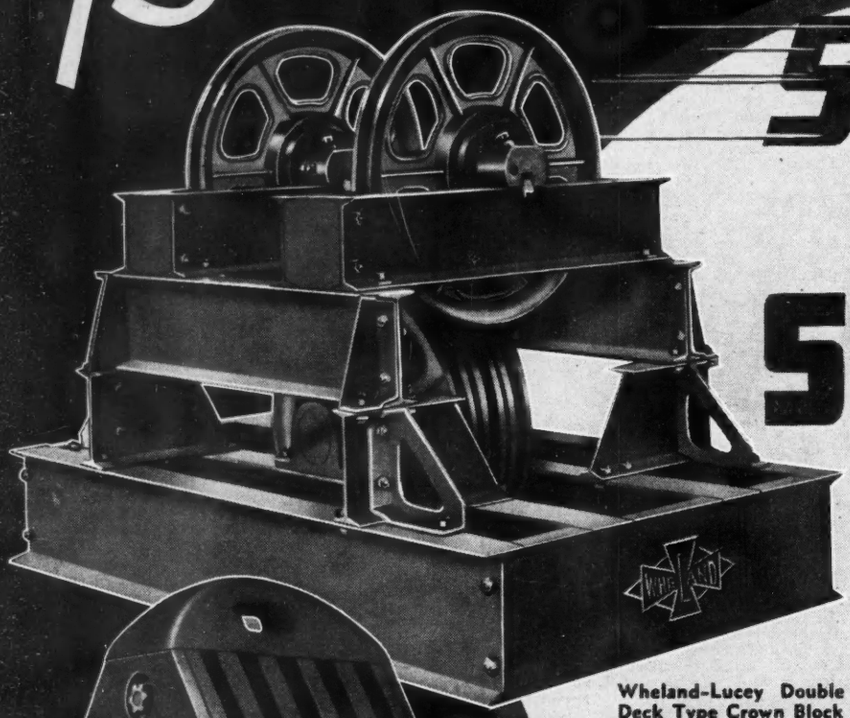
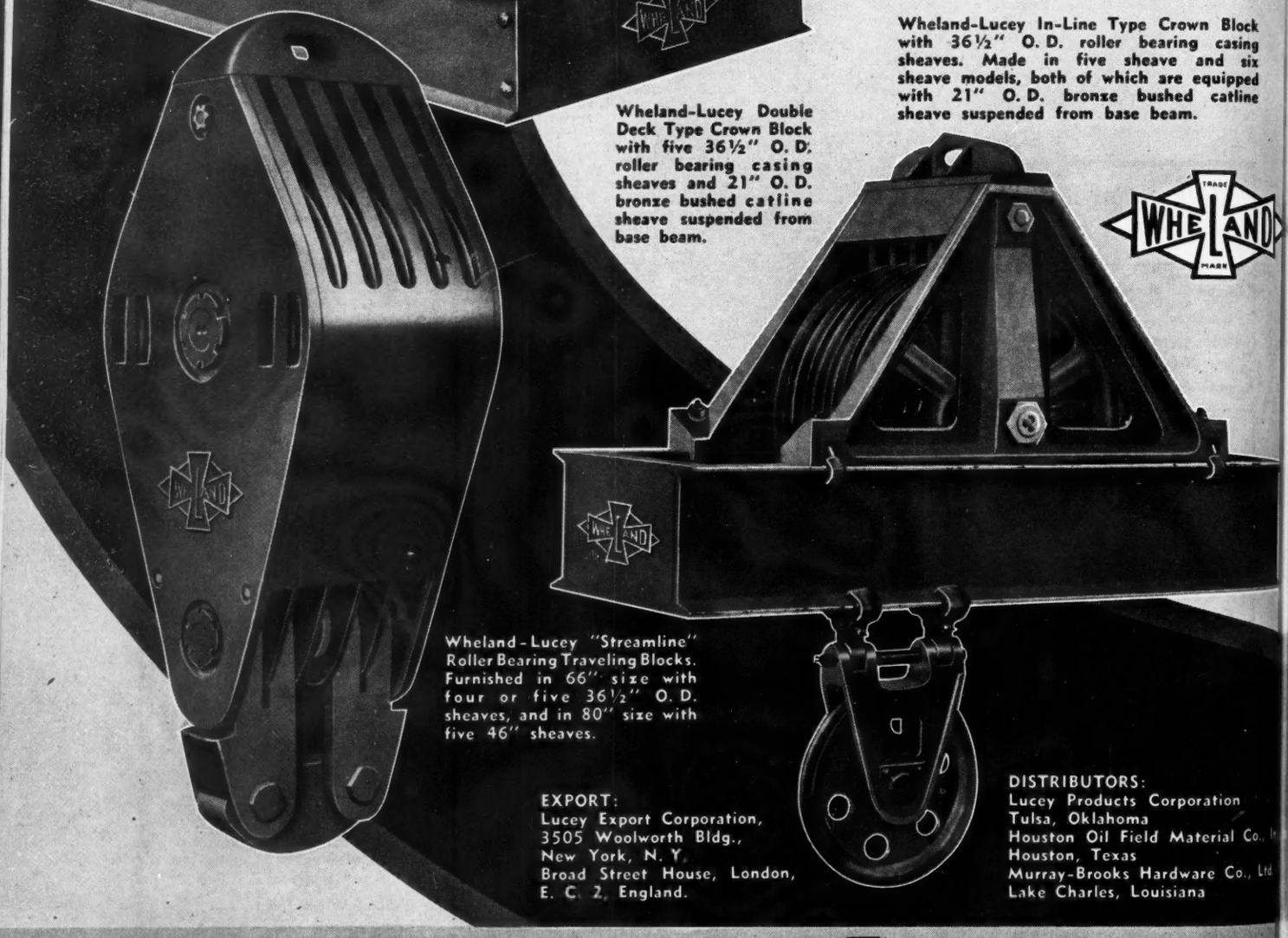


Wheland-Lucey Double Deck Type Crown Block with five 36½" O. D. roller bearing casing sheaves and 21" O. D. bronze bushed catline sheave suspended from base beam.

Wheland-Lucey In-Line Type Crown Block with 36½" O. D. roller bearing casing sheaves. Made in five sheave and six sheave models, both of which are equipped with 21" O. D. bronze bushed catline sheave suspended from base beam.



Wheland-Lucey "Streamline" Roller Bearing Traveling Blocks. Furnished in 66" size with four or five 36½" O. D. sheaves, and in 80" size with five 46" sheaves.

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DISTRIBUTORS:
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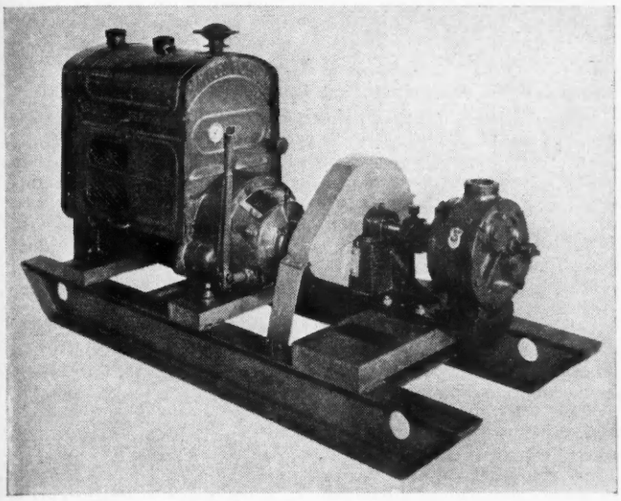
PORTABLE PUMPING UNIT
Southern Engine & Pump Company

Southern Engine & Pump Company, Houston, Texas, is introducing a new pumping unit which has a capacity of 120 barrels per hour and is suitable for an operating pressure of 100 pounds on oil. It consists of a 2-inch Viking rotary pump of the truck-mounting type, furnished with a self-aligning bearing and is connected through a cast iron gear and a micarda engine pinion to a 4-cylinder, 2⅝ x 3-inch gas and gasoline engine. The engine is a self-contained power unit and is equipped with a gear-tooth Twin Disc clutch. A safety feature is the electrically operated low oil level and high water temperature switch which automatically cuts the ignition off when the unit has been neglected.



Southern Portable Pump

The unit is mounted on a 6-inch structural steel base, rigidly constructed for either use as a permanent base or to permit loading on trucks for transporting to different points on a lease where the unit is supposed to take care of one or more batteries.

SEMI-AUTOMATIC ROLLER CUTTER
Landis Machine Company

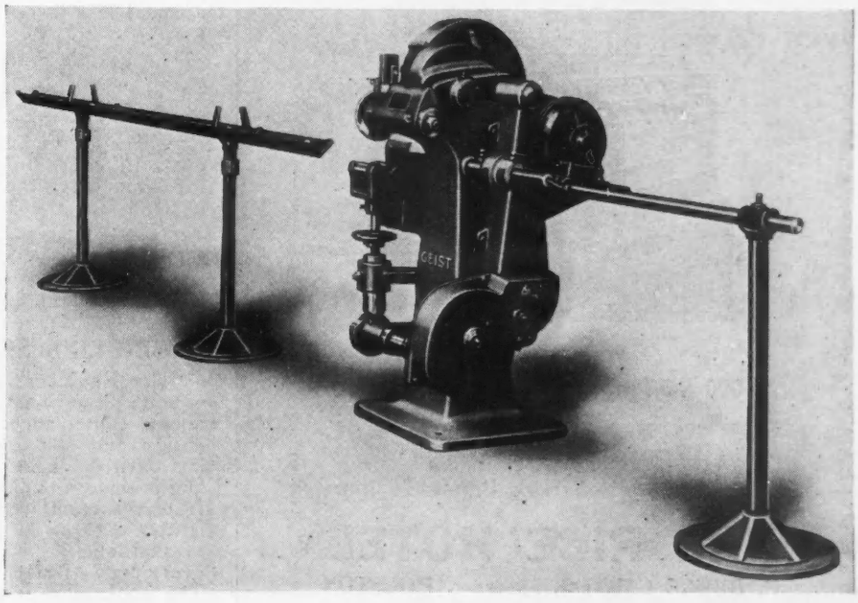
Geist Manufacturing Company, whose product is sold through Landis Machine Company, Waynesboro, Penna. has recently placed on the market a semi-automatic Roller Pipe Cutter in the operation of which the operator is relieved of all duty other than feeding the pipe into the machine.

The machine incorporates many new features of design, the most noteworthy of which is the operation of the rollers by a cam action. Separate cams are necessary for standard well and extra heavy pipe.

The new Geist is equipped throughout with anti-friction bearings, a heavy-duty roller bearing being used on the cutter disc spindle to assume the thrust load of a heavy cut. A high-pressure greasing system is used to insure positive lubrication.

Another feature of this new roller cutter is the lubricator built into the machine for lubrication and cleaning the cutter disc.

A new type of pipe support replaces the old type pipe stand formerly furnished with this machine. This new support is in the form of a trough which eliminates the gripping of the pipe while under cut. The trough is 10 feet long and is lined with a series of metal strips so placed as to minimize any friction between the pipe and the trough. The clamp enables the operator to raise or lower the support quickly to any desired height. Arms extending above the trough eliminate the possibility of the pipe falling out.



Geist Roller Pipe Cutter

MAGNETIC PLUGS
Lisle Corporation

Lisle Corporation, Clarinda, Iowa, is offering a magnetic drain plug. Used for some time in the drain openings of automobile engines, differential housings and transmissions and also in airplane engines, this plug is now offered by the company for use in mechanical equipment where it is desired to keep metallic chips out of a lubricant-circulating system or one in which splash lubrication from a reservoir is employed.

Mag Plug

The plug is illustrated as it appeared when removed from the bottom of an engine crankcase in a car driven between Omaha and Cincinnati.

The plug is available in a range of sizes to fit any drain opening. Its core is a powerful permanent magnet to which the chips adhere. Mag Plug is the trade name.

TRIPLE DRAIN CHANNEL ROOFING
Republic Steel Corporation

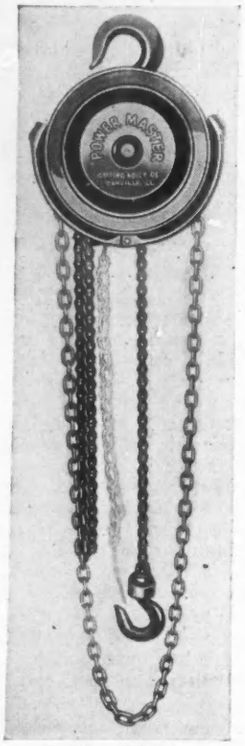
Republic Steel Corporation, 3100 East 45th Street, Cleveland, Ohio, announces development of a new roofing product, which is being introduced to the market under the trade name of Republic Perfected Triple Drain Channel Roofing.

The main feature of Triple Drain's construction lies in the use of four ridges and three valleys in each channel unit, thus providing three drainage channels instead of the conventional one or two. Because of this innovation, neither

driving rain nor capillary attraction can cause leaks.

A beaded channel makes a tight fit at the overlapping edge, creating a vacuum action. Any rain passing this point is carried into the center channel through the action of gravity.

Triple Drain is available in three types of metal: steel, copper-bearing steel, and rust-proof Toncan iron.



Coffing Hoist

HOIST

Coffing Hoist Company

Coffing Hoist Company, Danville, Illinois, says that revolutionary changes in spur gear chain hoist design have been incorporated in the new Coffing Power Master.

It has many new features, gravity lowering, lowering speed controlled by clutch and governors, may be stopped at the fractional part of an inch, and has free chain for quick adjustment to the load. The hoist is convertible in capacities of from 1½ to 6 tons, is exceedingly light in weight, the 1½-ton hoist weighing 98 pounds; the 3-ton, 100 pounds; the 4½-ton, 123½ pounds; and the 6-ton, 141 pounds.

The hoist has precision Lubriseal ball bearings, with planetary gear system sealed and running in oil. Equipped with special Diamond Chain designed to stand 400 percent overload. All models tested to 100 percent overload.

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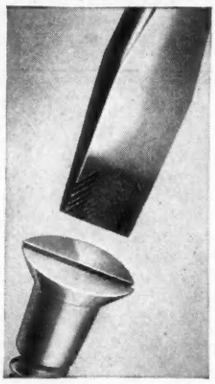
Bridgeport Hardware Manufacturing Company



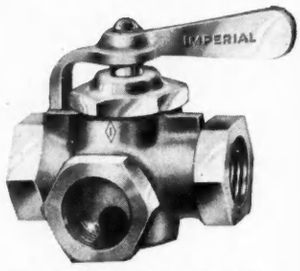
The Bridgeport Hardware Manufacturing Company, Bridgeport, Connecticut, is offering a new non-skid screw driver with a patented point for which many advantages are claimed. No pushing of the screw driver is required, since the natural turning pressure enables the patented point to firmly grip the inside of the screw slot. The tool is manufactured of chrome vanadium alloy spring tempered steel and the blade is embedded in an ebonoy handle and cannot loosen. The design of the patented point prevents slippage and damage to the screw as well as damage to the screw and to smooth and polished surfaces and injuries to the fingers and hands.

THREE-WAY VALVE

Imperial Brass Manufacturing Company

Imperial Brass Manufacturing Company, Chicago, announces a new 3-way combination shut-off and diverter valve (plug type), designed for use where there are two tanks or two liquid lines connecting into a single outlet. By means of this valve, oil or other liquid can be fed from either of the two tanks or lines, or both of them can be shut off entirely. Use of this valve eliminates the necessity of placing an individual shut-off at each source and assures that only one source will feed at a time. The single valve, controlling both tanks or lines, can be located where it will provide maximum convenience.

Valve is made with brass body and has spring loaded, packed stem which assures against stem leakage, and a solid bottom which eliminates any chance of bottom leakage. Handle indicator at top shows whether valve is shut off or which tank or line is being drained. Made in two sizes: ⅜- and ½-inch female I.P.T. all openings.



No. 205-H 3-Way Oil Valve

DIRECT READING RULE

Stanley Tools

Stanley Tools, New Britain, Conn. announces a new Stanley No. 6386 "Pull-Push" Rule having a direct reading feature for inside measurements. When the case and blade butt against the work, a red indicator on the case points to the exact inside measurement. There is nothing to add—no chance for mistakes.

The flexible-rigid steel blade has a white baked enamel surface against which the black graduations stand out and are easy to read. The blade is ½-inch wide, 6 feet long, and is graduated in inches and 16ths on both edges for the entire length. On the upper edge the blade is also graduated in 32nds for the first six inches.

The No. 6386 Rule is a handy, watch size tool for measuring straight distances, circumferences, irregular shapes and for outside as well as inside measurements.

Stanley Rule

ENGINEER'S SKETCH BOOK

"The Engineer's Sketch Book," an interesting 355-page volume describing mechanical movements, devices, appliances, contrivances and various details employed in the design and construction of machinery for every purpose, has been published by E. & F. N. Spon, London, England, and is ready for distribution in the United States. The book features actual working sketches and contains no general matter. Nearly 3000 illustrations are shown, and no theory or mathematics is advanced. Working sketches of almost every type of mechanical design and movement are shown. The book may be obtained through Gulf Publishing Company, Houston, Texas, for $4.25, plus 15 cents for postage.

SEPT. 19

First trip

Southern Pacific's New Streamlined Air-Conditioned Wonder Train Between Houston-Dallas

● As Southern Pacific's new streamliner *Sunbeam* whisks away with the smoothness of a cloud, beginning September 19 for its regular daily trip between Houston and Dallas, the flashing streak of black, orange and crimson will bring fame to the Southwest and Southern Pacific—and revolutionize modern railroading!

This wonder train is moulded into one sleek unit from the specially built locomotive to the windowed curve of the observation. The Streamliner sits low on the rails.

Inside a revelation of rich beauty and artistic design greets you. There are harmonious colors with contrasting upholstery; color schemes that vary from car to car. Restrooms are large and comfortably furnished. All chairs are cushioned with soft sponge rubber, covered with thick mohair. Chairs in Chair Cars are designed to face the windows if desired. Parlor Car and Observation have movable settees and chairs. The Dining Car (low priced "meals Select," a la Carte and Tray Service) is beautifully carpeted and flower-decked, lending atmosphere for perfect enjoyment of a delicious meal. All linen, silver and glassware are custom-made, bearing the *Sunbeam* crest. Completely air-conditioned. Radio in all cars except the Diner.

ON EXHIBITION

AT GRAND CENTRAL STATION — HOUSTON
TUESDAY, SEPT. 14 — 9 A.M. TO 10 P.M.

AT UNION STATION — DALLAS
FRIDAY, SEPT. 17 — 9 A.M. TO 9 P.M.

You are cordially invited to inspect the streamliner *Sunbeam* while on exhibition.

NO EXTRA FARE!

Our lowest one-way and round-trip fares are good on the new *Sunbeam*.

FIRST TRIP SEPT. 19

Commencing on this date, the new streamliner *Sunbeam* will offer daily service on the following schedule:

Northbound

Lv. Houston ..... 4:00 P.M.
Ar. Dallas ..... 8:45 P.M.

Southbound

Lv. Dallas ..... 4:15 P.M.
Ar. Houston ..... 9:00 P.M.

All seats in Chair Cars or Parlor Car must be reserved in advance (Parlor Car charge, $1.00 each). Only First Class Tickets honored in Parlor Car; no additional charge for seats in Chair Cars.

Try this wonder train on your next trip to Dallas or Houston.

Southern Pacific

J. T. MONROE,
Passenger Traffic Manager
Houston, Texas

This Week with the Industry's EQUIPMENT SUPPLIERS

W. P. White District Manager for Timken Roller Bearing

W. P. White has been appointed district manager in charge of steel and tube sales for The Timken Roller Bearing Company, Canton, Ohio, in the Eastern and Southern Pennsylvania district, with offices at 1208 N. Broad Street, Philadelphia. C. H. Kuthe will assist White in his new work.

A. R. Adelberg, district manager in charge of Timken Steel and Tube Division sales in New York City, with offices at 165 Broadway, will supervise steel and tube sales in the Philadelphia district as well as in the New York City area.

Distributors for Babcock & Wilcox Tube Company

The Babcock & Wilcox Tube Company, Beaver Falls, Pennsylvania, announces the appointment of Clowe & Cowan, Inc., Amarillo and Lubbock, Texas, as distributors for B&W Seamless Tubular Products in the Texas Panhandle, South Plains, and Eastern New Mexico.

Hercules Motors Corporation Makes Shipment of Diesels

The Hercules Motors Corporation recently shipped 400 Hercules Diesel engines to General Motors Corporation, against the latter's production orders. These engines will be used in commercial vehicles, according to the manufacturer.

Manufactured at the Hercules factory in Canton, Ohio, the engines were delivered to the General Motors Export Assembly Plant at Weehawken, New Jersey, for installation in Chevrolet truck chassis destined for foreign markets.

The units are standard Hercules DJXB Diesel engines of the 6-cylinder type, developing 77 horsepower at 2600 revolutions per minute.

Iron & Steel Products Increases Service Staff

Iron & Steel Products, Inc., has obtained the services of Jack Ryan, formerly with The Texas Company, and Bill Rosser, formerly with Symington Corporation, as special sales representatives with headquarters in their city sales office, Room 657, Railway Exchange, Chicago.

Shelgren Sales Representative for Dresser Manufacturing Co.

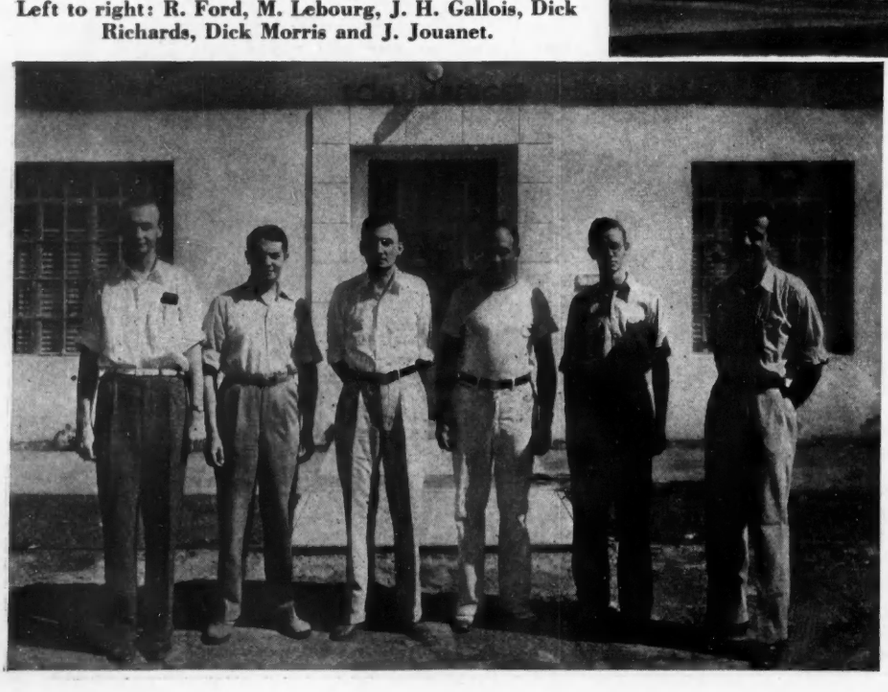
W. L. Shelgren has been appointed sales representative for S. R. Dresser Manufacturing Company, Bradford, Pa., for the state of Michigan, with the exception of Detroit.

With an experience in pipe-joint engineering and knowledge gained with Dresser over a period of 11 years, Shelgren will be in a position to give gas, oil and water companies in this territory the benefit of considerable experience in the solution of pipe-joint problems. His headquarters will be at the home office in Bradford, Pa.

W. L. SHELGREN
Sales Representative, S. R. Dresser Manufacturing Company.

At right: New home of Schlumberger Well Surveying Corporation at Bakersfield, California.

Below: Personnel of the company's Bakersfield branch. Left to right: R. Ford, M. Lebourg, J. H. Gallois, Dick Richards, Dick Morris and J. Jouanet.



Schlumberger Moves Into New Home at Bakersfield

Schlumberger Well Surveying Corporation announces completion of its new home in Bakersfield, California.

The new building, which has especially been designed for the use of the company, provides spacious offices, drafting rooms and equipment rooms and is air-conditioned throughout. It is located on the corner of 34th and L streets in Bakersfield.

J. H. Gallois will remain in charge of the Bakersfield division.

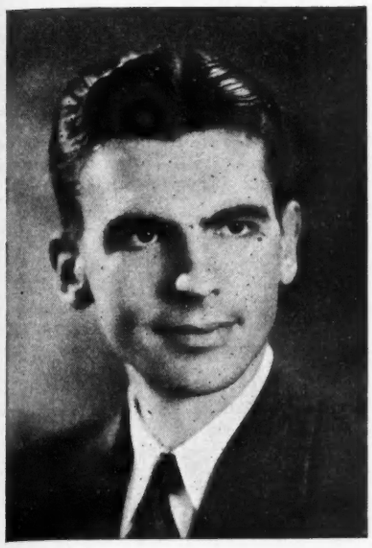
Lincoln Electric Company Opens West Virginia Office

The Lincoln Electric Company, manufacturers of arc welding equipment, Cleveland, Ohio, announces the opening of a new sales engineering office at 400 North Street, Bluefield, West Virginia. The new office will be in charge of Wm. H. Schuster, who for the past year, has been assistant welding in-

structor in the Lincoln Welding School at Cleveland. He will maintain welding consultation and supply service for the coal fields of West Virginia, Virginia and Kentucky.

Baash-Ross Tool Company Promotes B. Bronzan

Baash-Ross Tool Company, 5512 Boyle Avenue, Los Angeles, announces promotion of B. Bronzan to the post of assistant sales manager.



B. BRONZAN
Appointed Assistant Sales Manager for Baash-Ross Tools

Until his recent promotion he was head of the order department. His headquarters will continue to be at the general offices in Los Angeles.

Uhrich Supply Company Distributes B&W Boiler Tubes

The Babcock & Wilcox Tube Company, Beaver Falls, Pa., announces the appointment of the Uhrich Supply Company, 914 Central St., Kansas City, Missouri, as distributors of B&W seamless boiler tubes in the Kansas City trade territory—western Missouri and Kansas.

Winton Engine Names Schachner Assistant Sales Manager

Winton Engine Corporation, subsidiary of General Motors, Detroit, announces appointment of Max H. Schachner as its assistant sales manager. His principal responsibility will be direction of sales of the new Winton two-cycle Diesel engine to manufacturers and distributors.

Hercules Powder Declares Dividend

At the regular meeting of the Board of Directors of Hercules Powder Company, Wilmington, Delaware, on August 25, a quarterly dividend of $1.50 a share was declared on the company's outstanding common shares. This dividend is payable on September 25, to stockholders of record at 3:00 p. m., September 14.

As previously announced by the company, it is also expected that stockholders of record at 3:00 p. m. on September 14 will be offered rights to subscribe, at $75 a share, to additional shares of the company's common stock in the ratio of one such share for each ten shares then held. These rights will be exercisable on or before October 14, 1937.

13 firms plan cooperative exhibit at New York Fair

New York.—Thirteen American oil companies have organized The Petroleum Industry Exhibition Incorporated which will present in the New York World's Fair 1939 an institutional exhibit. A contract between the Fair and the petroleum exhibition corporation has been signed. Thomas H. Taylor of Standard Oil Company of New Jersey signed as president of the petroleum organization.

By the terms of this contract, the petroleum industry is to sponsor the erection of its own building to house the exhibit. The site selected is a plot of 64,889 square feet in the industrial section on the main avenue radiating diagonally eastward from the Theme Plaza, the focus of the Fair's exhibit area, to the amusement zone. The cost of the plot was $22,177.42.

Headquarters for the oil exhibit corporation have been opened at Room 3028, 50 West 50th Street. It has already been in process of organization for several months, its development being recommended by the American Petroleum Institute's World's Fair Committee, following general approval of the plan for a cooperative exhibit designed to tell the dramatic story of the industry's past, present and probable future services to mankind.

Details of organization were completed by President Taylor, D. T. Pierce, of Sinclair Refining Company, and E. E. Puryear, of The Texas Company, comprising the sub-committee appointed by the Insttitue's committee to take active direction of the entire project; and by Thomas K. Schmuck, of counsel to The Texas Company; P. C. Spencer, of counsel to Sinclair Refining Company, and Robert H. Scholl, of counsel to the Standard Oil Company of New Jersey.

Officers of the new organization in addition to President Taylor are: vice presidents, Daniel T. Pierce, E. E. Puryear and W. R. Boyd, Jr., American Petroleum Institute; treasurer, R. P. Resor, Standard Oil Company of New Jersey; and secretary, Victor H. Scales, American Petroleum Institute.

Members of the board of directors, each representing a participating oil company, are:

R. E. Wilson, American Oil Company, New York; H. B. Stone, The Atlantic Refining Company, Philadelphia, Pa.; H. D. Frueauff, Cities Service Oil Company, New York; C. H. Hathaway, Gulf Oil Corporation, Pittsburgh, Pa.; L. S. Wescoat, The Pure Oil Company, Chicago, Ill.; W. C. Burns, Richfield Oil Corporation of New York, New York; R. R. Griffin, Shell Union Oil Corporation, New York; D. T. Pierce, Sinclair Refining Company, New York; B. B. Jennings, Socony-Vacuum Oil Campany, New York; T. H. Taylor, Standard Oil Company of New Jersey, New York; W. C. Pew, Sun Oil Company, Philadelphia, Pa.; E. E. Puryear, The Texas Company, New York; and S. W. Candee, Tide Water Associated Oil Company of New York.

GOOD SERVICE for

. . . and these

DARCOVA VALVE CUPS

were still in Good Condition!

Ten years and more is a long time—a long time for a single set of valve cups to give service on an average of three hours a day—**six days a week!** Yet that's the record set by "Darcova" in a well in Tulsa, Oklahoma. We'll send you complete details if you're interested—and you surely **should** be . . . if you want to benefit by the service and the savings for which these ORIGINAL COMPOSITION VALVE CUPS are famous!

DARCOVA
(Orange Label) the standard for more than thirty years under severe service at all depths.

DARVAL
(Blue Label) for super-service in wells to approximately 2,000 feet in depth.

DARFLEX
(Green Label) the popular favorite for wells to 800 feet in depth.

Manufactured Only By

DARLING VALVE & MFG. CO.
Williamsport, Pa.

Squeaks from the Bull Wheel

The Philanthropist

"How can you talk to me like that," she wailed, "after I've given you the best years of my life?"

"Yeah?" returned the husband, unimpressed by her emotion. "And who made 'em the best years of your life?"

Statistics Don't Lie

Tell me candidly, doctor, do you think I'll pull through?

Oh, you're bound to get well. You can't help yourself. The Medical Record shows that out of one hundred cases like yours one percent invariably recovers. I've treated ninety-nine cases and every one of them died. Why, man alive, you can't die if you try! There's no humbug in statistics.

Inherited

"Wot yo doin', chile?"

"Nothin', mammy."

"My, but yo' is gettin' like yo' father."

Gone

"See here, young fellow, you mustn't say 'I ain't going.' You must say 'I am not going,' 'He is not going,' 'They are not going,' 'We are not going'."

"Gee, ain't nobody going?"

No Peeping

"The leading lady seems to have a break in her enunciation this evening."

"You keep your eyes on your music."

A Race

"George," said the bride's mother, "did you send for a doctor?"

"I sent for three," replied the efficiency expert proudly. "Whoever gets here first gets the case."

He Did

"Did you steal this rug?"

"No, a lady give it to me and told me to beat it."

Willing to Wait

Say, missus, can ye gimme a job diggin' taters?

Land sakes! We don't dig taters for another month yet.

That's all right, ma'am, I'll live here till diggin' time.

Old Clothes

The teacher had been speaking about sending cast-off clothing to the poor, and finally asked Willie: "Now, what do we do with our old clothes?"

"If they're Mom's, she puts in the tucks for Sister; and if they are Pop's, they're cut down to fit me."

Diary of Sam'l Pepys Walton Elmer Decker, August 27

Item, one fishing rod	$18.00
Item, line	6.50
(Note—Had to give both line and rod to wife to cover up what she might think unnecessary expense item)	
Item, gasoline for car 800 miles.	12.00
Item, lubricating oil for same...	1.00
Item, hotel rent 3 days	30.00
Item, horse rental	10.00
Item, doctor bill in re horse rental	5.00
Item, ditto	5.00
Total cost	$87.50

Results—

Item, blisters on lip caused by sun

Item, blisters on point far removed from lip, caused by horseback riding

Item, two fish, net weight 9 ounces

Recap.—

Total cost of fish, blisters, etc., incidental to trip, on fish poundage basis, $155.52 per pound

Reflections—

Could have bought same amount of fish, less blisters, etc., at home for $.25.

Izzy and Ikey

"Fadder, give me a dime to go and see the sea serpent."

"Vasteful boy! Here's a magnifying glass, go find a vorm."

In Chicago

"Say, that bruiser of an 'L' guard isn't so tough as he's supposed to be."

"No? How's that?"

"When I fell down getting in, he wiped his feet before he stepped on my face."

No Chance

"The police say you and your wife had words. Is that true?"

"Well, Judge, I had the words, but never got a chance to use them."

No Experience

"Does a hen sleep with her eyes closed or open?"

"I don't know; I never slept with a hen."

Recall

The student's allowance had run out, so he wrote home for more money. Feeling a bit nervous about the impression he would make, he ended his letter:

"P. S.—I did not like writing to you. In fact, I ran after the postman to get this letter back."

A week later he received the following reply:

"You will be glad to know I did not receive your letter."

Considerate

"Well, Pat, so you want to leave the works. Are your wages too small?"

"The wages are all right, sor, but I'm afraid I'm doin' a horse out of a job."

Getting the Better of the Law

"Smith certainly is a foxy fellow. He's drawn up his will in such a way that the lawyers can't get more out of it than his own heirs."

"How's that?"

"Why, he left half his fortune to one of the best lawyers in the country, provided he saw to it that the other half went to Smith's children intact."

IS FLUID CONTROL A PROBLEM?

Solve it with MacClatchie "Hydro-Seal" Plug Valves — the valve that gives perfect fluid control in all types of installations. The MacClatchie patented "Hydro-Seal" principle—grease-expanded lips, that spread evenly against the inside walls of the valve body—insures an absolutely pressure-tight seal, and a simple turn of the grease screw maintains the seal and completely lubricates the entire plug —a further check against leakage. Under even the highest pressures MacClatchie "Hydro-Seal" Valves remain free and easy turning due to elimination of compressible packing and use of ball bearings to carry thrust loads in the high pressure models.

A complete range of sizes from ½" to 20" is available in screw, flanged, or union ends . . . hand or gear operated . . . and for working pressures from 250 to 3,000 pounds.

MacClatchie "Hydro-Seal" Plug Valves are sold by leading supply houses everywhere!

MacCLATCHIE
MANUFACTURING COMPANY
COMPTON, CALIF. HOUSTON, TEXAS
Export—Geo. R. Woods, 17 Battery Pl., New York City